# WATER PLANNING AREA #9a -- SALINAS

WPA 9a generally consists of the Salinas River watershed along the Highway 101 corridor from Santa Margarita Lake north to San Miguel. Purveyors include the city of Paso Robles and the following:

- Templeton Community Service District
- Garden Farms County Water District
- County Waterworks District No. 1 San Miguel
- County Waterworks District No. 8 Santa Margarita
- Atascadero Mutual Water Company
- McNamara Water Supply
- Durand Water Co
- Adelaide Estates MWC
- Almira Water Assn
- Town Creek Water Supply
- McNamara Water Supply
- Via Condias Water Supply
- Atascadero Lake
- Babe Ruth Trailer Park
- Los Robles M.H. Estates
- Mustang Mobile Village
- Rancho Colina M.H. Park
- Resthaven M.H. Park
- Rinconada Trailer Park
- Santa Margarita Lake Campgrnd
- Cal-Shasta Club, Inc.
- Christmas Cove Co.
- Hazard Water Supply
- Atascadero State Hosp. Water
- Bee Rock Store Water Supply
- Bow Valley Aquiland Wtr. Supply
- Camp Wantala Water Supply
- El Paso de Robles School
- Ritchie's Water Supply
- Moe Water Supply
- The Hillhouse Water Supply
- Pete Johnson Chevrolet
- Pleasant Valley Elem School
- Port-a-Port West
- Pozo Saloon
- San Paseo Truck Stop
- Santa Lucia School
- Shan-Val Hills Vineyard
- Wine World Estates
- Mustang Springs MWC

# DEMAND

The development of demands for the San Luis Obispo (SLO) MWP Update involved collection and analysis of four types of existing data: 1) urban demand; 2) agricultural demand; 3) rural demand; and 4) environmental demand. Following the review of existing plans and data, existing demands for each of the four categories were prepared for each of the 12 WPAs. Next, data regarding growth and future water use was analyzed to develop a preferred approach for the development of future water demands. These future demands were then prepared and projected by the same four demand categories for each of the WPAs.

The total existing and future demands for WPA 9a are listed in Table 1. A discussion of demands by each category follows.

**Table 1**
**WPA 9a Demand totals by Category[a]**

| Category of Demand | ExistingDemand (ac-ft/yr) | Projected Demand (ac-ft/yr) |
|---|---|---|
| Urban | 14,450 | 25,830-41,120 |
| Agricultural | 27,180 | 22,740-31,820 |
| Rural | 5,450 | 7,440 |
| Environmental | NA | NA |
| **Subtotal** | **47,080** | **56,010-80,380** |

a. All figures have been rounded to the nearest 10's.

## Urban Demand

This section documents existing and projected urban water demands for WPA 9a. The existing and projected figures have been prepared upon review of the water master plans of the cities of Atascadero and Paso Robles. In addition, the County growth figures and historical per capita demand levels for the communities of San miguel, Santa Margarita, and Templeton were also reviewed. Table 2 summarizes the current and projected urban water demands for WPA 9a.

**Table 2**
**WPA 9a Urban Water Demands[a]**

| Existing Demand (ac-ft/yr) | 2020 Demand (ac-ft/yr) | Buildout Demand (ac-ft/yr) |
|---|---|---|
| 14,450 | 25,830 | 41,120 |

a. All figures have been rounded to the nearest 10's.

Many incorporated cities within the County and/or purveyors to those cities have prepared water master plans for planning purposes, including the Cities of Atascadero and Paso Robles.

Atascadero Mutual Water Company prepared a Water System Master Plan in 1993, and updated existing and projected demand figures in 1996 for use during their Booster Station Upgrade Project. ). In the 1996 water demand update, actual service area population was noted as 26,015 and annual demand was estimated at 6,781 AF. Build-out service area population was projected to be 32,450 and demand was estimated at 10,646 AF/yr.

The April 1995 Update of the Paso Robles' Water Master Plan (1993) was also reviewed. Water use for each land use category was compiled and projected to be 6,220 AF/yr.

Projected demands for 2020 and buildout demands were based on the total number of acres for residential land uses included in the General Plan at occupancy levels stated in the General Plan update. 2020 demand was determined to be 13,080 AF/yr and buildout demand was projected to be 26,780 AF/yr.

Table 3 includes the existing and projected water demand for Atascadero and Paso Robles.

**Table 3**

**Summary of Water Demands for the Incorporated Cities**

| City/Purveyor | Existing Demand (ac-ft/yr) | 2020, Demand (ac-ft/yr) | Buildout Demand (ac-ft/yr) |
|---|---|---|---|
| Atascadero | 6,781 | 10,646 | 10,646 |
| Paso Robles | 6,220 | 13,080 | 26,780 |

Existing urban water demands for the unincorporated communities of San Miguel, Santa Margarita, and Templeton (see Table 4), were calculated from the County's *Annual Resource Summary Report* for the period 1993 to 1997. Average water production figures were used in combination with 1995 population figures (see Table 5) to determine existing per capita water use rates (gpcd).

In order to determine future water demands for San Miguel, Santa Margarita, and Templeton, the existing per capita water values were applied to the projected 2020 and buildout population figures obtained from the County. Projected population figures are shown in Table 6 and future water demands are reflected in Table 7.

Although per capita use is expected to go down in the future, the number of people per households is generally expected to increase. Therefore, the same per capita values were maintained under existing and future scenarios. A discussion on the uncertainty of per capita water use is discussed in Chapter 2.

**Table 4**
**Average Water Production Figures and Resulting Per Capita Values**

| Community | Average Production (ac-ft) 1993 to 1997 | Per Capita Values |
|---|---|---|
| San Miguel | 265 | 197 |
| Santa Margarita | 218 | 161 |
| Templeton | 968 | 272 |

**Table 5**
**Existing and Projected Population Figures for Unincorporated Communities**

| Unincorporated Communities | 1990[1] | 1995[2] | 2020[3] | Buildout[4] |
|---|---|---|---|---|
| San Miguel | 1,123 | 1,200 | 1,876 | 3,599 |
| Santa Margarita | 1,066 | 1,208 | 1,411 | 1,426 |
| Templeton | 2,795 | 3,173 | 4,717 | 8,664 |

Source: San Luis Obispo County Planning Department.

1. Population numbers are from the U.S. Census of Population and Housing. Avila Beach and Santa Margarita were developed by County Planning Department.
2. 1995 figures based upon the California Department of Finance and County Planning, and include group quarters.
3. 2020 figures have been projected by the County.
4. Buildout figures were obtained from the County

**Table 6**
**Summary of Water Demands for the Unincorporated Communities**

| Community | Existing Demand (ac-ft/yr) | 2020 Demand (ac-ft/yr) | Buildout Demand (ac-ft/yr) |
|---|---|---|---|
| San Miguel | 265 | 414 | 794 |
| Santa Margarita | 218 | 254 | 257 |
| Templeton | 968 | 1,437 | 2,639 |

**Uncertainties**
The Paso Robles' Master Water Plan results in a substantially larger per capita use than other communities within the County due largely to the approach that took into account non-drought conditions.

## Agricultural Demand

This section documents existing and projected Gross Irrigated Water Requirements (GIWRs) for WPA 9a. The existing and projected demand figures relied upon published data and accepted methods, along with information gathered from extension agents, consultants, growers, and irrigation specialists. Tables 7 and 8 summarize the current and projected agricultural water demands for WPA 9a. Anticipated future changes in cropping acreage in the Salinas WPA include a significant increase in vineyard coupled with declining alfalfa and pasture. The effect of this anticipated acreage combined with changes in irrigation efficiency contributes to a fairly steady agricultural water demand.

**Table 7**
**Existing GIWR for WPA 9a (AF/Yr).**

| Annual Gross Irrigation Water Requirement (AF/Yr) | | |
|---|---|---|
| **Low** | **High** | **Average** |
| 22,734 | 31,616 | 27,175 |

**Table 8**
**Projected GIWR for WPA 9a (AF/Yr)**

| Projected Annual Gross Irrigation Water Requirement (AF/Yr) | | |
|---|---|---|
| **Low** | **High** | **Average** |
| 22,738 | 31,824 | 27,281 |

**Procedures and Concepts**

Estimating GIWR for local conditions can be characterized by the following general formula:

$$\text{GIWR} = \frac{\text{Crop ET} - \text{Contrib. from rain or shallow water table}}{(1 - \text{Leaching Requirement}) \times \frac{\text{Irrigation Efficiency}}{100}} + \text{Climate Control}$$

This analysis must be completed for each crop group, acreage, and weather pattern to calculate total GIWR (in AF) by WPA (WPA).

***Cropping Patterns***

Table 9 summarizes estimates of irrigated cropping acreage for WPA 9a.

**Table 9**
**Estimated cropping acreage for WPA 9a**

| Alfalfa | Pasture | Permanent | | Veg. | Vineyard | Total |
|---|---|---|---|---|---|---|
| | | Citrus | Decid. | | | |
| 1,500 | 4,400 | 0 | 200 | 200 | 2,500 | 8,800 |

Estimated from annual crop report, county GIS records and pesticide use records.

***Crop Evapotranspiration***

Several UC Cooperative Extension Leaflets describe estimating crop evapotranspiration (ETc) where:

ETc = ETo x Kc

ETc is estimated by multiplying the weather factor (ETo) with the crop coefficient (Kc). ETo values for the Paso Robles climate group (49.2 in/yr) were assigned to WPA 9a and Kc values are specific to the crop groupings (see Chapter 2). Yearly ETc totals for the crops in WPA 9a are summarized in Table 10.

**Table 10**
**Yearly crop evapotranspiration (ft) for each crop group in WPA 9a**

| Alfalfa | Nursery | Pasture | Permanent | | Vegetable | Vineyard |
|---|---|---|---|---|---|---|
| | | | Citrus | Decid. | | |
| 3.6 | 2.0 | 3.7 | 0 | 3.3 | 1.3 | 1.6 |

***Effective Rainfall***

WPA 9a was assigned the Atascadero rainfall group (23.1 in/yr)for the purpose of estimating effective rainfall (See chapter 2). Ranges of percentage of effective precipitation were applied to the crop groupings in WPA 9a and are listed in Table 11. Higher percentages were assigned to the deeper rooted crops according to their larger rootzone water holding capacity.

**Table 11**
**Assigned ranges of typical effective precipitation for crop groups in WPA 9a**

| Crop Group | Effective Precipitation Range (%) [1] | |
|---|---|---|
| | Low | High |
| Alfalfa | 40 | 60 |
| Pasture | 40 | 60 |
| Permanent | | |
| Deciduous | 40 | 60 |
| Vegetable [2] | 15 | 25 |
| Vineyard | 30 | 50 |

1. As a percentage of total annual rainfall.
2. 2x adjustment factor for multiple cropping.

***Frost Protection***

Irrigation water is commonly applied for frost protection on grapes and strawberriesin WPA 9a. The amount of water used for frost protection varies from season to season depending on the weather, and it varies from farm to farm depending on the system application rate. For the purpose of calculating applied water, 0.5 AF/Ac/Year is utilized for the water applied for frost protection on grapes. For the purpose of calculating applied water, 0.8 AF/Ac/Year is utilized for the water applied for frost protection on strawberries

***Leaching Requirements***

The amount of extra irrigation water, which needs to be applied to satisfy the leaching requirement for a particular crop, depends on the salt tolerance of the crop and the irrigation water quality. Ground water quality in San Luis Obispo County is typically adequate for crop production and does not necessitate additional *irrigation* water applied for leaching since it is typically satisfied by normal rainfall. Chipping et al. 1993 reports that of the wells tested in the Paso Robles Ground Water Basin Study, most of the wells tested have EC levels < 1.0 dS/m. Given these water qualities and salt tolerances typical with central coast crops, leaching requirements would be satisfied by rainfall.

***Irrigation Efficiencies***

Irrigation efficiency can be expressed by the following relationship:

$$\text{Irrigation Efficiency} = \text{Distribution Uniformity} \times (1 - \text{Losses})$$

The Cachuma Resource Conservation District routinely conducts irrigation evaluations in Santa Barbara and San Luis Obispo Counties and is an excellent resource in describing the actual performances of irrigation systems in the region. Irrigation efficiencies were assigned to crop group according to prevalent irrigation system type and knowledge of typical local uniformities (Table 12).

**Table 12**
**Assigned irrigation efficiency averages for each crop group in WPA 9a**

| Crop Group | Irrigation Efficiency Range (%) | |
|---|---|---|
| | Low | High |
| Alfalfa | 60 | 70 |
| Pasture | 60 | 70 |
| Permanent | 60 | 70 |
| Vegetable | 65 | 75 |
| Vineyard | 65 | 75 |

***Existing Gross Irrigation Water Requirement by Crop Group***
Existing GIWRs for WPA 9a are summarized in Table 13. The ranges provided in Table 13 do not represent the extremes in GIWR, but do represent the typical ranges in a normal year given local variations in effective precipitation and irrigation efficiencies. Table 7 summarizes the current agricultural water demands for WPA 9a.

**Table 13**
**Summary of Existing GIWR for WPA 9a by crop group (AF/Ac/Yr)**

| Alfalfa | | Pasture | | Permanent-Deciduous | | Vegetable | | Vineyard | |
|---|---|---|---|---|---|---|---|---|---|
| Low | High | Low | High | Low | High | Low | High | Low | High |
| 3.2 | 4.4 | 3.4 | 4.6 | 2.7 | 3.8 | 1.5 | 2.0 | 1.1 | 1.8 |

***Future Gross Irrigation Water Requirements by Crop Group***
Several issues would affect changes in future irrigation water requirements:

- Changes in cropping acreage and type of crop
- Changes in irrigation methods

**Cropping Patterns**

Trends in cropping patterns were examined through historical crop reports and previous water use projections completed by the Department of Water Resources. Table 14 summarizes projected crop acreages in WPA 9a.

**Table 14**
**Projected cropping acreage for WPA 9a**

| Alfalfa | Pasture | Permanent | | Veg. | Vineyard | Total |
|---|---|---|---|---|---|---|
| | | Citrus | Decid. | | | |
| 1,300 | 4,200 | 0 | 300 | 200 | 3,800 | 9,800 |

**Irrigation Methods**

Table 15 reflects the projected irrigation efficiencies by crop group in WPA 9a.

**Table 15**
**Projected irrigation efficiencies by crop group in WPA 9a**

| Crop Group | Irrigation Efficiency Range (%) | |
|---|---|---|
| | Low | High |
| Alfalfa | 60 | 70 |
| Pasture | 60 | 70 |
| Permanent | 70 | 80 |
| Vegetable | 70 | 80 |
| Vineyard | 70 | 80 |

The same procedures that were utilized to calculate existing agricultural demands were utilized in estimating projected irrigation water requirements. The projected values reflect the changes in cropping acreage and irrigation efficiencies. Table 8 summarizes the projected agricultural demands for WPA 9a.

**Table 16**
**Summary of Projected GIWR by crop group for WPA 9a (AF/Ac/Yr)**

| Alfalfa | | Pasture | | Permanent-Citrus | | Permanent-Deciduous | | Vegetable | | Vineyard | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Low | High | Low | High | Low | High | Low | High | Low | High | Low | High |
| 3.2 | 4.4 | 3.4 | 4.6 | 0 | 0 | 2.4 | 3.3 | 1.4 | 1.8 | 1.1 | 1.7 |

## Rural Demand

Rural water demands in the Salinas WPA include dwelling units scattered throughout the hills and valleys, especially in the Salinas River valley. The commercial areas are not included in Tables 17 and 18 below. Water is produced in private wells from the groundwater basin in the area.

**Table 17**
**Current Demand – 1995**

| Population | Pop/Du | Houses | Duty (ac-ft/ac) | Demand[a] (ac-ft/yr) |
|---|---|---|---|---|
| 9,356 | 2.92 | 3,204 | 1.7 | 5,450 |

a. Demand figure has been rounded to the nearest 10's.

**Table 18**
**Projected Demand – 2020**

| Population | Pop/Du | Houses | Duty (ac-ft/ac) | Demand[a] (ac-ft/yr) |
|---|---|---|---|---|
| 12,775 | 2.92 | 4,375 | 1.7 | 7,440 |

a. Demand figures has been rounded to the nearest 10's.

**Data Deficiencies**
The following additional data would improve the accuracy of this study:

- **Commercial**. A few commercial activities exist in the rural areas that were not accounted for in the urban demand. It represents a very small percentage of the total water used.

- **Dwelling Units**. The study was based upon population numbers, with an estimate of dwelling units derived from population figures divided by persons per household. Demand should be based upon a count of dwelling units by WPA. This information would be derived from assessor data.

- **Certificate Lots**. Many parcels of land in the area may be buildable. It is difficult to ascertain how many will be built upon.

- **Golf Courses.** There are golf courses in the area that may not be accounted for in the urban demand section. These use between 1.5 to 2.5 acre feet/acre/year. An 18-hole course would have approximately 100 acres of irrigated turf, resulting in the use of between 150 and 250 acre feet per year. Return flow from golf course irrigation is estimated to be 15%. This information should be added to the rural demand.

## Environmental Demands

### Current Demands

Information on current environmental water demands is available from two sources: 1) conditions on water rights permits and licenses and associated orders on file with the State Water Resources Control Board, and 2) agreements between the California Department of Fish and Game and other entities. A discussion of current environmental demands in WPA 9a, as reflected in actual permit conditions, is presented below.

**Salinas River**

"Licensee's dam shall be maintained so that the water level in the reservoir can be reduced two feet eight inches below full reservoir level by means of spillway flashboards. On November 1 of each year licensee shall remove spillway flashboards and release into Salinas River any water in storage above the spillway level; and each storage season no water shall be stored above the spillway level until a visible surface flow exists in Salinas River between the licensee's reservoir and the confluence of Nacimiento River. No water shall be diverted directly to use or to storage under this license at any time water is being released from Salinas Reservoir (Santa Margarita Lake) in compliance with condition 2A of Board Order dated June 1, 1972, or as amended, issued pursuant to applications 10211 and 10216. (App 24365, lic 11158)"

"Water shall be diverted under this license only when there is measurable surface flow in the Salinas river at the United States Geological Survey streamflow gage at Paso Robles. Prior to diverting water each year, licensee shall notify the State Water Resources Control Board that such condition exists" (App 25199 Lic. 12295).

"Water shall be diverted under this permit only when there is measurable surface flow in the Salinas River at the United States Geological Survey streamflow gage at Paso Robles (Gage #11147500). Prior to diverting water each year, permittee shall notify the State Water Resources Control Board in writing that said conditions exist. Permittee shall also notify the Board in writing if, after commencing diversion under this permit, the streamflow at the Paso Robles gage becomes un-measurable prior to the end of the diversion season authorized herein. App 30299, Permit 20785

**Atascadero Creek**

"Water shall be collected to storage behind Eagle Ranch Dam only when there is surface flow from Atascadero Creek into Salinas River. Prior to diverting water each year, licensee shall notify the Board that such condition exists." (App. 25675, Lic. 12151).

Unnamed tributary to Graves Creek

"Water may be diverted under this license only when surface flow exists in Graves Creek between the point of diversion and the confluence of Graves Creek and Salinas River". (App. 21339, Per. 14636, Lic. 10520)

**Nacimiento River**

MOU between CDFG and the Monterey County Flood Control and Water Conservation District (now Monterey County Water Resources Agency) requires a minimum release of 25 cfs from Nacimiento Reservoir except under drought or emergency conditions (defined as water surface elevation of at or below 748-feet which is equal to storage of 132,900 acre-feet). During a drought or emergency condition a minimum 10 cfs discharge is required. At water surface elevation of 689 feet or below (22,000 acre feet storage) no minimum discharge is required.

**Future Demands**

The CDFG is currently developing a protocol for determining stream flow needs to protect environmental values (Waithman, CDFG, Yountville, personal communication, February 1998). This protocol is under development and has not been formally accepted or even formally proposed. It is presented here to indicate one estimate of possible future demand. This protocol has not been adopted by CDFG and if it were, other groups or agencies may not accept it. Key provisions may include the following:

- Reservation of 60% of the average annual unimpaired wet-season flow for instream habitat.
- Bypass of all natural flow during dry season (June to September).
- No diversions until stream flows to the ocean (sandbar breached).

WPA 9a contains the Salinas River and some of its tributaries. Streams in this area could support steelhead trout although the habitat is not as good and populations are not as secure as those in coastal streams on the west side of the coast range. Applying the criteria to average annual gaged runoff available from USGS gages in the Salinas Basin can develop some idea of the magnitude of environmental water demand. Environmental demand in the Salinas River could be between 7 TAF and 66 TAF depending on water year type.

**Data Deficiencies**

There has been no organized complete effort to quantify instream flow needs in streams of San Luis Obispo County. Studies have been conducted on some streams and restrictions have been placed on certain water rights permit holders to protect instream uses but these have generally focused on the needs of one or a few key species and have not resulted in clear, objective assessments of instream flow needs.

There is not sufficient data to complete a detailed analysis of environmental water demands for all streams in the County. There is no known data for unimpaired runoff for any stream though it is possible estimates could be developed from available rainfall data. The only

readily available (electronic) data is from USGS and County maintained streamflow gaging stations. The USGS data presents average runoff estimates as well as minimum and maximum runoff for each station but this data reflects existing water use and water project operations and in most cases does not reflect unimpaired conditions. Average runoff estimates could also be developed for the SLO gage data and discontinued USGS gages but the information would need to be in an accessible database.

A generic approach to instream flow needs assessment may be useful and data for such an assessment may be available. The County should consider a Tennant type approach using unimpaired runoff estimates generated from rainfall data. Given the wide annual variability in rainfall and runoff, an instream flow needs assessment should account for differences in normal, wet, and dry year flow needs. The County should also have all streamflow data entered in a computer database to facilitate its use.

**Uncertainties**

In many cases permit or license conditions do not specify a reservation of stream flow for environmental benefit. Rather, they are restrictions on use by individual rights holders. These restrictions are intended to provide benefits to fish and wildlife. However, it is not usually clear how restrictions on an individual water right interact with other water rights and effect streamflows. In addition, it is not always clear how permit conditions are interpreted in terms of an environmental demand. For example, many of the permit conditions call for a "visible surface flow" in a given stream but it is not clear how much water this represents.

Future environmental water demand is subject to great uncertainty due to lack of knowledge of instream flow needed to protect the aquatic resources, lack of information on existing runoff conditions and diversions, and the inherent annual variability in rainfall and runoff. For planning purposes, one could assume that the upper range of future demand would be defined by a percentage of the average annual unimpaired runoff (UAAR) during the wet season and no diversion during the dry season. This task is complicated since many streams are not gaged streams and unimpaired flow must be estimated using hydrologic modeling. This information is not presently available.

**References**

Stalnaker, C., B.L.Lamb, J. Henriksen, K. Bovee, and J. Bartholow. 1995. The Instream Flow Incremental Methodology: A primer for IFIM. Biological Report 29. U.S.D.I., National Biological Survey, Washington, D.C.

SWRCB, 1997. Staff Report Russian River Watershed. Proposed Actions to be taken by the Division of Water Rights on Pending Water Right Applications within the Russian River Watershed. Division of Water Rights. Sacramento, California

## Supply

The three largest communities in WPA 9A (Paso Robles, Atascadero, and Templeton) operate separate water distribution systems. Templeton CSD and Paso Robles have a system intertie on 12" diameter distribution lines at Highway 46 and Theater Drive. The distance between Templeton and Atascadero's systems is approximately a mile and a half.

Similarly, Santa Margarita's water system does not adjoin any other community systems, though the Salinas Pipeline (which delivers water to City of San Luis Obispo and Cal Poly)

traverses the Santa Margarita service area. San Miguel does not adjoin any other community water system.

## Groundwater Supply

Table 19 lists the ground water basins in WPA 9a. WPA 9a includes the Paso Robles ground water basin and the upstream basins of Pozo and Cholame. Urban water uses are predominant. The Regional Water Quality Control Board had a study of the Paso Robles ground water basin performed by the Coastal Resources Institute at Cal Poly State University for the purpose of establishing best management practices and salt objectives on which the basin plan was to be based. This report identifies the water quality issues within particular areas of the Paso Robles basin. Some of these issues include native boron and salinity, geothermal waters, and agricultural and municipal salt loading and locally high nitrate concentrations. Water planning will need to include the impact of future uses and management strategies on water quality as it relates to the basin objectives.

**Table 19**
**WPA 9a Ground Water Basins**

| Basin Name | Basin Area in Square Miles | Basin yield with original descriptive term in acre-feet per year | Production - year in acre-feet |
|---|---|---|---|
| Paso Robles | 640 (16) | 47,000 total annual recharge (16) | 104,621 - 1986 (17) |
| Pozo | 5.6 (6) | 1,000 safe available storage (6) | 300 - 1958 (6) |
| Cholame | | | |

(6) California Department of Water Resources, 1958, San Luis Obispo County Investigation: State Water Resources Board Bulletin No. 18, vol. I and II.
(16) California Department of Water Resources, 1979, Ground Water in the Paso Robles Basin: Southern District Report.
(17) San Luis Obispo County, Department of Planning and Building, 1991 Annual Resources Summary Report.

### Data Deficiencies

The estimates in Table 19 represent the results of published data from numerous sources, some of which are as much as 40 years old. It is also important to note that most of the basins have not been studied in detail, and true perennial yield values are not known. Thus, much of the information does not reflect current conditions, population, water usage, and agricultural trends. It also tends to point out the necessity of developing new data to more accurately describe the hydrologic conditions of the basins. Most of the estimates of ground water extraction are at least 10 years old.

### Uncertainties

The Paso Robles ground water basin has been broken into three different sub-basins (WPAs 9a, 9b, and 9c) based on geologic structure, hydrology and water use. The level of investigation done by previous studies (DWR, 1979 and DWR 1958) performed for the entire Paso Robles ground water basin does not appear to provide sufficient detail for planning purposes. The entire Paso Robles basin yield of 47,000 AF/yr is shared among the three sub-basins and the percentage of yield each has access to is undetermined.

The “basin yield” values described in the table reflect the results of a variety of methods of determining yield, including annual recharge, safe yield, seasonal replenishment, and net safe annual extractions, and thus may or may not reflect an accurate perennial yield value for the basin.

## Surface Water Supply

A list of existing surface water supplies in WPA 9a is included in Table 20. Ground water supplies, augmented by an estimated 3,693 AF/yr of appropriated stream flows, supply water to users throughout WPA 9a. Releases from Salinas Reservoir benefit ground water basin recharge and help maintain a "live stream" flow in the Salinas River.

**Table 20**
**Existing, Developed Water Sources Other Than Ground Water**
**(Approx. Yield, acre-feet per year)**

| Existing Source | Approximate Yield |
|---|---|
| Reclaimed Water Other than Passive Return Flow | ? (Chalk Mt. Golf) |
| Appropriated Stream Flows | 3,693 |
| **TOTAL NON-GROUND WATER YIELD [1]** | **3,693** |

1...Source: Water Rights Information Management System printout dated April 23, 1998 from the State Water Resources Control Board for all water rights in SLO County. Figures shown are "Maximum Annual Use" totals by WPA as noted in water rights filings. Figures do not include estimated supplies to entities whose app. rights state a max. direct diversion (in cfs) or a max. storage volume (in acre-feet). Due to this, appropriated stream flows stated here are probably under-stated.

### Uncertainties

While the water rights information states the amount of water individuals and agencies are entitled to withdraw, it does not tabulate actual withdrawals. For example, an owner may be entitled to divert 86,000 gallons per day from May through October of each year. This does not mean that the owner typically diverts this each and every day for six months. On the other hand, this same owner may, in a dry year, want to divert his full entitlement over the six month period. However, if there is not enough water in the creek to support his diversion, it may not be physically possible to divert the full amount.

The reader is alerted to this especially when interpreting the estimates of appropriated stream flows stated in Table 20.

## DEFICIENCIES

The Salinas River corridor projects rapidly growing urban demand. Large areas are coming under vineyard development. There is a strong reliance on the ground water basin without an understanding of the entire system. This area faces the highest likelihood of adjudication or other state involvement in water allocations. Nacimiento is the area's only known alternative for future supply.

**Table 21**
**Existing (ac-ft/yr)**

| Demand | Grndwater Supply | NonGrndwater Supply | Total Supplies | Balance[a] (Deficiency) |
|---|---|---|---|---|
| 47,080 | 48,000 | 3,693 | 51,693 | 4,610 |

a. Balance (Deficiency) figure has been rounded to the nearest 10's

**Table 22**
**Projected (ac-ft/yr)**

| Demand | Grndwater Supply | NonGrndwater Supply | Total Supplies | Balance [a] (Deficiency) |
|---|---|---|---|---|
| 56,010-80,380 | 48,000 | 3,693 | 51,693 | (4,320)-(28,690) |

a. Balance (Deficiency) figure has been rounded to the nearest 10's.

# ALTERNATIVES

This section is an evaluation of future water supply options for WPA 9a. The criteria previously selected by the WRAC are:

- Cost
- Risk
- Reliability
- Water Rights
- Local Control
- Water Quality
- Timing
- Environmental Impacts
- Agricultural Impacts
- Institutional Constraints
- Recreation
- Hydroelectric Potential

Each water supply option summary includes a comparative ranking of the criteria listed above. The rankings are based on the following:

**Comparative Rankings**
Features of water supply options are ranked 1 to 5, with 5 being the best. A "0" implies a fatal flaw which may render the supply option infeasible. The basis of comparison, in general, is:

**Cost**: The lower the unit cost ($/AFY), the higher the ranking.

**Risk**: Primarily a subjective comparison of the potential for project cost escalation.

**Reliability**: Primarily a comparison of project yield, AFY, during years of below-average rainfall.

**Water Rights:** A favorable 5 ranking indicates no known problems; a 3 indicates potential challenges; and a 1 indicates known opposition which may stop the project.

**Local Control**: A favorable 5 indicates physically located in and administered by an agency within the County; a 3 indicates some involvement of outside agencies; and a 1 indicates control from outside the County.

**Water Quality**: A favorable 5 indicates projects which enhance water quality; a 3 indicates no change; and a 1 indicates a negative impact on water quality.

**Timing:** A favorable 5 indicates projects with designs complete; a 3 indicates projects for which predesign at least is underway; and a 1 indicates projects for which design is 5 years or more away.

**Environmental**: A favorable 5 indicates certified EIR in place; a 3 indicates environmental review underway and no significant unmitigable issues identified; and a 1 indicates significant impacts foreseen. A "0" in this category indicates a potential environmental fatal flaw.

**Agricultural Impacts:** A favorable 5 indicates projects which help agricultural, particularly by reducing competition for ground water and by other means.

**Institutional Constraints**: Reflects the degree of organizational support. A low ranking is indicative of the need for complex agreements.

**Recreation**: Reflects the degree to which the project may enhance recreational opportunities. A 3 indicates no direct impact.

**Hydroelectric Potential**: Indicates the degree to which the project may provide opportunities for hydroelectric power generation. Little information is available regarding hydroelectric power generation opportunities for the supply options examined. In general, options with little or no opportunity for power generation were ranked "1". Options that may expand existing power generation facilities were ranked "3".

Potential water supply projects that may benefit this WPA (and for which information exists), include the Nacimiento Water Supply Project and the Lower Jack and Santa Rita Reservoirs. This is not to say that these are the only supplemental water sources available. Rather, published data are currently available for only these potential sources.

## Nacimiento

The Nacimiento Water Supply Project described herein is as described in the August 1997 Draft EIR. It involves construction of over 60 miles of pipelines ranging in size from 33- to 8-inches in diameter, plus pump stations, storage tanks, and outlet works. The project is planned to supply 17,500 AFY to 18 water purveyors from Paso Robles to Coastal San Luis Obispo County.

| Category | Remarks | Comparative Ranking |
|---|---|---|
| Cost[i] | ▪ $120 million project cost.<br>*WPA 2*: $625 - $1,097 per AFY<br>*WPA 3*: $1,167 - $2,198 per AFY<br>*WPA 4*: $669 - $1,135 per AFY (SLO City)<br>*WPA 4*: $2,488 - $3,783 per AFY (Others)<br>*WPA 9a*: $368 - $1,000 per AFY<br>*WPA 10*: < $200 per AFY (opinion; cursory estimate). | 4 |
| Risk[ii,iii] | ▪ Long distance conveyance - risk of delivery interruption<br>▪ EIR seismic evaluation - "Insignificant after mitigation".<br>▪ Cost sensitive to participation level.<br>▪ Moderate risk of construction cost escalation.<br>▪ Forecasted deliveries can be maintained even with a planned 1-month annual maintenance outage. | 4 |
| Reliability[ii,iii] | ▪ 17,500 AF yield even through 1987-1991 drought.<br>▪ Complements groundwater supply in planning areas 3, 4, and 9a. | 5 |
| Water Rights[iii] | ▪ Strong contractual position with Monterey County.<br>▪ Pending legal challenge originating in Monterey County. | 3 |
| Local Control[iv] | ▪ Watershed and dam within SLO County, operated by Monterey County Water Resources Agency.<br>▪ Potential Monterey County and Division of Safety of Dams issues. | 4 |
| Water Quality[iv] | ▪ Limited data indicates favorable quality. | 3 |
| Timing[iv] | ▪ High participation needed to advance.<br>▪ Minimum 3 years for delivery.<br>▪ Little opportunity for staging (matching supply with demand). | 2 |

## Nacimiento (cont'd)

| Category | Remarks | Comparative Ranking |
|---|---|---|
| Environmental Impacts[ii] | ▪ Long term significant residual impacts to recreation and growth inducement.<br>▪ Cumulative impacts in areas of water resources and fisheries.<br>▪ Short-term impacts on traffic, air quality and biological resources.<br>▪ Helps minimize potential overdrafts in regions 9a, 3, and 4. | 2 |
| Agricultural Impacts[ii] | ▪ No short- or long-term significant residual impacts.<br>▪ Reduces competition between urban and agricultural groundwater users. | 4 |
| Institutional Constraints[v] | ▪ Usual permitting process for similar pipeline projects.<br>▪ High project participation required. | 3 |
| Recreation[ii] | ▪ Associated lake-level impacts may negatively affect recreation. | 2 |
| Hydroelectric Potential[iv] | ▪ Reduce power generation capability at the dam by < 10 percent.<br>▪ No new hydro potential identified along pipeline. | 1 |

## Lower Jack and Santa Rita Reservoirs

The potential reservoir sites examined herein are based on information contained in the March 1986 DWR Master Water Plan Update prepared for the County of San Luis Obispo. Reservoir sites were identified conceptually at Lower Jack Creek (gross storage of 15,000 to 28,000 acre-feet) and Santa Rita Creek (gross storage of 10,000 to 23,500 acre-feet). Several alternative reservoir sites were conceptually identified with an estimated gross storage of 7,000 to 12,200 acre-feet.

| Category | Remarks | Comparative Ranking |
|---|---|---|
| Cost | ▪ Capital Costs ranging from $10.4 to $18.5 million (1984).<br>▪ Average unit costs range from $200 to $463/AF (1984).<br>▪ Environmental mitigation costs not quantified. | 5 |
| Risk | ▪ High risk of construction cost escalation.<br>▪ Geologic conditions at sites may present significant risk.[vi] | 1 |
| Reliability[vi] | ▪ Safe yields range from 2,700 AF to 6,000 AF for reservoirs ranging in size from 10,000 AF to 28,000 AF. | 3 |
| Water Rights | ▪ No known active filings. | 1 |
| Local Control | ▪ Watersheds and dam sites within WPA 9a. | 5 |
| Water Quality[vi] | ▪ Generally good stream quality. | 3 |
| Timing | ▪ Long lead time for permitting may render projects infeasible due to costs. | 1 |
| Environmental Impacts | ▪ Potential major adverse local impacts at the reservoir sites.<br>▪ Potential problems with maintaining in-stream flows. | 0 |
| Agricultural Impacts | ▪ Impacts may occur at reservoir sites. | 2 |
| Institutional Constraints | ▪ DSOD approvals needed.<br>▪ Complex permitting process may render projects infeasible. | 0 |
| Recreation | ▪ May offer small scale opportunities at reservoirs. | 3 |
| Hydroelectric Potential | ▪ None identified. | 1 |

## Data Deficiencies

No data exist for Water Conservation Programs.

## References

[i] "Lake Nacimiento Water Supply Project Financing Analysis" by Leifer Capital for San Luis Obispo County Flood Control Water Conservation District, December 1997.
[ii] "Draft EIR Nacimiento Water Project" by Ogden Environmental and Energy Services for County of San Luis Obispo, August 1997.
[iii] "Preliminary Evaluation for the Nacimiento Water Supply Project, Reliability Evaluation" by Boyle Engineering Corporation for San Luis Obispo County Flood Control Water Conservation District, 1992.
[iv] "Nacimiento Water Supply Project EIR preparation Phase Engineering Draft Report" by Carollo Engineers for County of San Luis Obispo, July 1996.
[v] "Nacimiento Water Supply Project Permit Outline" by Boyle Engineering Corporation for San Luis Obispo County, 1997.
[vi] "San Luis Obispo County Master Water Plan Update" by Department of Water Resources for San Luis Obispo County, March 1986.