

**TECHNICAL MEMORANDUM**

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2 **TO:** Bruce Buel, General Manager, Nipomo Community Services District  
3 **FROM:** Joel Degner, Brad Newton, Robert G. Beeby  
4 **RE:** Nipomo Mesa Current and Projected Demands and Potential for Seawater Intrusion,  
5 01-0236-00-9100  
6 **DATE:** October 24, 2006

7 **INTRODUCTION**

8 The Nipomo Community Service District (NCSD) requested SAIC to (1) review the  
9 current and projected demands and (2) comment on the various interpretations of how many  
10 years Nipomo has until there is a seawater intrusion problem.

11 The following four reports were reviewed, and the findings are the subject of this  
12 memorandum.

- 13 1. *Water Resources of the Arroyo Grande – Nipomo Mesa Area*. 2002. Prepared by Department  
14 of Water Resources, Southern District. (DWR 2002).
- 15 2. *Water Resources Evaluation Nipomo Mesa Management Area*. 2003. Prepared by SAIC.  
16 (SAIC 2003).
- 17 3. *Resource Capacity Study: Water Supply in the Nipomo Mesa Area*. November 2004. Prepared  
18 by San Luis Obispo County Department of Planning and Building. (SLO 2004).
- 19 4. *Nipomo Mesa: Groundwater Resource Capacity Study*. 2004. Prepared by S.S. Papadopoulos  
20 & Associates, Inc. (Papadopoulos 2004).

21 Seawater intrusion was evaluated by the Department of Water Resources (DWR 2002) and  
22 by the County of San Luis Obispo (Papadopoulos 2004). SAIC reviewed these analyses and  
23 comments are presented herein.

24 **SUMMARY OF FINDINGS**

25 **Current and Projected Demands**

26 Comparison of current and projected water demands are summarized in the following  
27 bullets. Some of the possible reason's for the discrepancies are presented in the Methodology  
28 section.

- 29 • The current Nipomo Mesa water demand ranges from 9,000 to 11,000 AF/year  
30 (SAIC 2003, SLO 2004, Papadopoulos 2004). The difference of roughly 10 percent  
31 above and below the mean is to be expected for these types of analyses.

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- 1           • The projected demands range from 13,000 to 17,000 AF/year at 2020 or build out.  
2                     (SAIC 2003, SLO 2004, Papadopoulos 2004). The difference of a little over 13  
3                     percent above and below the mean is not unusual for projections of this type.

4   **Seawater Intrusion**

- 5           • Department of Water Resources found no evidence of seawater intrusion in the  
6                     coastal monitoring wells in 1996. There are no known water quality measurements  
7                     since 1996 of the coastal monitoring wells.
- 8           • Updating the water quality measurements made at the coastal monitoring wells to  
9                     determine the present condition of saltwater/freshwater interface is essential and  
10                    is recommended by SAIC as part of the groundwater monitoring program under  
11                    development for the Nipomo Mesa Management Area.
- 12          • Papadopoulos 2004 created two simplistic 2-D models of seawater intrusion and  
13                    concluded that for the Nipomo Mesa (1) there is a lag time of decades between  
14                    overpumping and seawater intrusion (2) the model results show there could be  
15                    seawater intrusion if pumping exceeds 60% of the inflow in the basin.
- 16          • A three-dimensional model is needed to improve the understanding of the  
17                    dynamics of the seawater intrusion threat to the Nipomo Mesa groundwater  
18                    resource.
- 19          • Any projection today would be overly speculative without current water quality  
20                    data.

21   **METHODOLOGY**

22   **Current and Projected Demands**

23   *Water Resources of the Arroyo Grande - Nipomo Mesa Area. 2002.*  
24            *Prepared by Department of Water Resources, Southern District.*  
25            *(Table 26)*

26   **Boundary:** Nipomo Mesa Hydrologic Sub-Area (HSA) - 17,580 acres

Values in AF/year	1995	2010	2020
Urban	3,100	5,200	6,600
Ag	1,600	1,600	1,600
Other	1,000	1,000	1,000
<b>Demand</b>	<b>5,700</b>	<b>7,800</b>	<b>9,200</b>

27   **Methodology:** Urban extractions were based on urban water service agencies data where  
28                    available, areas outside of the urban water service agencies were estimated based on  
29                    population, land use, and per capita use information. Agricultural demands were  
30                    estimated by land acreage, crop type, and evapotranspiration of the applied water values.

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1 Other extractions were for cooling, recreation, and miscellaneous uses. The estimates  
2 were made in 1995 and projected to 2010 and 2020. Agricultural and Other extractions  
3 were held constant, and urban extractions were projected based on per capita use  
4 estimates and population projections.

5 SAIC reviewed the DWR document and earlier drafts in the course of the preparation of  
6 the hydrologic inventory discussed in the following section. It is noted that there were  
7 some discrepancies identified while SAIC was work was in progress that were discussed  
8 with DWR representatives during the course of both investigations. The discrepancies  
9 relate mostly to the difference in study areas and time period but could also be associated  
10 with the amounts of deep percolation of precipitation on the NMMA.

11 *Water Resources Evaluation Nipomo Mesa Management Area. 2003.*  
12 *Prepared by SAIC. (Hydrologic Inventory)*

13 **Boundary:** NMMA as defined is Phase III of the groundwater adjudication (the NMMA  
14 area was increased in the proposed stipulation) -19,140 acres

Values in AF/year	1995	2000	2020
Agriculture	3,780	4,410	4,410
Urban	4,040	5,240	10,820
Golf Course	410	880	1270
<b>Water Demand</b>	<b>8,230</b>	<b>10,530</b>	<b>16,500</b>

15 **Methodology:** Agricultural extractions were based on the land acreage, crop types, and  
16 evapotranspiration of the applied water demand. Projected agriculture use was held  
17 constant at the 2000 level. Urban water extractions were based on an area method rather  
18 than a per capita method used by DWR. The projection was made based on an increase in  
19 urban area. SAIC estimate is higher than DWR, due to its larger area and different  
20 assumptions related to agricultural and urban extractions as well as deep percolation of  
21 precipitation.

22 *Nipomo Mesa: Groundwater Resource Capacity Study. 2004. Prepared by*  
23 *S.S. Papadopulos & Associates, Inc. (Table 8)*

24 **Boundary:** Water Planning Area 6 - Nipomo Mesa Sub-area (~18,000 acres)

Values in AF/year	2002	2020
Urban	3,900	7,340
Agricultural	2,900	1,900
Rural	2,420	3,350
<b>Water Demand</b>	<b>9,220</b>	<b>12,590</b>

25 **Methodology:** The projections are based the on the San Luis Obispo County's Master  
26 Water Plan Update (2003). Urban is the actual extractions in 2002 of the NSCD and the  
27 Southern California Water Company (SCWC). Agricultural demand is based on acreages

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1 of various crops, evapotranspiration, and irrigation efficiency. Rural demand includes  
 2 rural dwelling units, schools, churches, and some commercial as well as Black Lake and  
 3 Cypress Ridge golf courses. It includes water provided by other purveyors than the NCSD  
 4 or SCWC as well as private and domestic wells. Private and domestic wells were based on  
 5 the number of rural dwelling units.

6 **Resource Capacity Study: Water Supply in the Nipomo Mesa Area.**  
 7 ***November 2004. Prepared by San Luis Obispo County Department of***  
 8 ***Planning and Building. (Table 2)***

9 **Boundary: Water Planning Area 6 - Nipomo Mesa Sub-area (~18,000 acres)**

Values in AF/year	Afy/DU	2003	2010	2020	Buildout
Nipomo (NCSD)	0.68	1,924	2,256	2,832	3,997
Nipomo (Cal Cities)	0.92	1,328	1,558	1,656	1,656
Summit Station (NCSD)	1.5	183	203	225	240
Black Lake (NCSD)	0.78	383	436	436	436
Callender-Garrett	0.5	109	125	125	125
Palo Mesa	0.78	715	839	897	897
Woodlands	0.64	0	528	845	845
Rural (Residential)	1	670	785	986	2,260
Rural (Golf Courses)		300	700	700	700
Total Non-Ag		5,612	7,430	8,700	11,156
Agriculture		2,990	2,590	1,900	1,900
Water Demand		8,602	10,020	10,600	13,056

10 AF/DU- Acrefeet per Dwelling Unit

11 **Methodology:** The methodology is similar to the demand estimate in the Papadopoulos  
 12 2004. The urban extractions are broken down into sub-categories and demand is  
 13 estimated for 2003 instead of 2002.

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