Resource Capacity Study

Water Supply in the Los Osos Area

February 2007

San Luis Obispo County
Dept of Planning and Building

Executive Summary

This Resource Capacity Study (RCS) is an analysis of water supply and demand in the Los Osos groundwater basin. It is based on reports commissioned by the Los Osos Community Services District and prepared by the local hydrogeology firm of Cleath and Associates. According to the County General Plan, a Resource Capacity Study should: 1) inventory existing water resources available to the agency operating the system; 2) document existing demand for water by all area user groups; and 3) explore any conservation measures that could reasonably be imposed by the water agency.

A Resource Capacity Study results in a determination of a Level of Severity (LOS) of the resource. Levels are set at I, II or III:

Level I	Resource Capacity Problem
Level II	Diminishing Resource Capacity
Level III	Resource Capacity Met or Exceeded

The response to these established levels of severity can range from capital project funding requirements to restrictions on development.

This Resource Capacity Study has determined that there is a Level of Severity III for water supply in the Los Osos area. Recommended actions include implementation of aggressive water conservation measures, prohibition of subdivisions, and requirements that all water purveyors meter water use and adopt an ascending rate structure.

This RCS will be reviewed by the Planning Commission at a public hearing. The Commission shall hear testimony on the subject and will make a recommendation to the Board of Supervisors. The Board will then conduct a second public hearing on the matter. The Board may choose to "certify" the Level of Severity and adopt measures to bring the resource into balance. Alternatively, the Board may chose to certify a different level of severity and take some different action.

1.) Introduction/Background

This Resource Capacity Study was ordered by the Board of Supervisors in December 2005. The Board unanimously set a Level of Severity III for water supply and directed that a Resource Capacity Study (RCS) be prepared.

The Los Osos ground water basin is the only source for local municipal, private domestic and agricultural water supply in the Los Osos area. The onshore

portion of the Los Osos Valley ground water basin covers approximately 10 square miles, of which approximately 3.3 square miles underlie the bay and sand spit, and 6.7 square miles underlie Los Osos, Baywood Park, and the Los Osos Creek valley. When groundwater is pumped out of the lower aquifer, four potential sources of recharge are available for replenishment. These sources are the Los Osos Creek valley, the upper aquifer, bedrock, and sea water.

The Los Osos Valley ground water basin has a limited amount of sustainable water available for use, known as the basin safe yield. The basin safe yield is the amount of naturally occurring ground water that can be withdrawn from an aquifer on a sustained basis, economically and legally, without impairing the native ground-water quality or creating undesirable effects, such water supply problems or water quality degradation.

In 2002, the Los Osos CSD conducted a safe yield analysis for the Los Osos Valley ground water basin in its Water Master Plan. Indications showed that there is an imbalance between the upper and lower aquifer production, with too much production in the lower aquifer and too little production in the upper aquifer. The imbalance has caused sea water intrusion in the lower aquifer. Sea water intrusion is the movement of salt water into a fresh-water aquifer. It not only has an affect on the water quality of the aquifers, but the soil can be damaged as a result of sea water intrusion. Salt build-up is left behind when water evaporates and makes in difficult or impossible to grow crops.

A relatively low percentage of sea water in fresh (less than 5%) can have a significant adverse impact on the potential beneficial uses of the water. Sea water intrusion was first documented in deep basin sediments in 1977 and has been affecting water purveyor wells since the mid 1990's. At present, sea water intrusion is occurring in the western end of the ground water basin. Sea water intrusion is active in the lower aquifer due to basin overdraft. An overdraft is the condition of a groundwater basin or sub basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years. Sea water intrusion is taking place in areas of the Los Osos Valley groundwater basin but to what extent is unknown.

The Resource Management System. The county's Resource Management System (RMS) is a mechanism for ensuring a balance between land development and the resources necessary to sustain such development. When a resource deficiency becomes apparent, efforts are made to determine how the resource capacity might be expanded, whether conservation measures could be introduced to extend the availability of unused capacity, or whether development should be limited or redirected to areas with remaining resource capacity. The RMS is designed to avoid adverse impacts from depletion of a resource.

The RMS describes a resource in terms of its "level of severity", based on the rate of depletion and an estimate of the remaining capacity, if any. In response to a resource issue or recommended level of severity, the Board of Supervisors may direct that a Resource Capacity Study be conducted. The RCS provides additional details that would allow the Board to certify a level of severity and adopt whatever measures are needed to eliminate or reduce the potential for undesirable consequences. The Board of Supervisors directed the preparation of this RCS in December 2005.

This document is the Resource Capacity Study for water supply in the Los Osos Valley groundwater basin. It is organized in the following manner:

1. **Introduction/background**
2. **Summary of studies done**
3. **Discussion**
   - a **Methods for estimating safe yield**
   - b. **Safe yield/overdraft**
4. **Estimate of projected growth**
   - a. **Subdivisions**
   - b. **Vacant lots**
5. **Summary of water supply and demand**
   - a. **Purveyors**
   - b. **Private wells**
   - c. **Agricultural use**
6. **Measures to increase supply**
7. **Measures to extend resource capacity**
8. **Recommended level of severity**
9. **Recommended actions**

2. Completed studies

In 2003, the Los Osos Community Services District (Los Osos CSD) obtained a grant form the California Department of Water Resources (DWR) for a project consisting of two separate studies; an assessment of sea water intrusion in the Los Osos Valley ground water basin, and an investigation into the source of the lower aquifer recharge. These studies address issues that affect ground water resource management and planning for a sustainable community water supply.

Sea Water Intrusion Assessment

The purpose of the sea water intrusion assessment was to document the historical rate of advance of the sea water wedge and the transition zone, and to establish the current position of these elements. The lower aquifer system in the Los Osos Valley groundwater basin is currently experiencing sea water intrusion. Most of the community water supply is generated from the lower aquifer system;

therefore, understanding the extent and rate of sea water intrusion is critical to protecting the community water supply.

According to the Sea Water Intrusion Assessment, six aquifer zones have been identified in previously published reports. They include the alluvial aquifer in the Los Osos Creek valley, the perched aquifer (Zone A), the transitional aquifer (Zone B), the upper aquifer (Zone C), and the lower aquifer (Zones D and E). A regional clay aquitard averaging 50 feet in thickness separates the upper aquifer from the lower aquifer. Basin-wide ground water production averaged 3,480 acre-feet per year (afy) between 1985 and 2001, with 2,510 afy being drawn from the lower aquifer.

The Assessment describes the problem of seawater intrusion. Less than five percent sea water in a fresh water aquifer can have a significant adverse impact on the potential beneficial uses of the water. There are certain criteria for evaluating sea water intrusion. The criteria consist of water levels and water quality. The sea water border will move in response to changes in aquifer pore pressure and will move toward an approximate equilibrium based on the Ghyben-Herzberg relation.

The Ghyben-Herzberg relation is comprised of analytical solutions to approximate the intrusion behavior. These solutions are based on a number of assumptions that do not hold in all field cases. The Ghyben-Herzberg relation states, for every foot of fresh water in an unconfined aquifer above sea level, there will be forty feet of fresh water in the aquifer below sea level. According to the Ghyben-Herzberg relation, a fresh water head of approximately 5 feet would be needed to prevent the sea water interface from moving onshore within the upper aquifer. A fresh water head of approximately 9 feet would be required to prevent the sea water interface in the lower aquifer from moving inland. Currently, only upper aquifer water levels are sufficiently high enough to prevent sea water intrusion.

Regarding the sea water assessment for the Los Osos Valley groundwater basin, the Los Osos CSD concluded that:

1. The upper aquifer freshwater/ sea water interface is relatively stable beneath the Morro Bay sand spit, with a potential for active intrusion during extended drought periods.

2. Sea water intrusion in the lower aquifer (zone D) has advanced at an average rate of 60 feet per year between 1985 and 2005, and is currently between Pecho Road and Doris Avenue.

3. Sea water intrusion in the lower aquifer (zone E) has advanced at an average rate of 54 feet per year between 1977 and 2005, and is currently between Broderson Avenue and Palisades Avenue.

Lower Aquifer Recharge Assessment

The Sea Water Intrusion report also included an assessment of lower aquifer recharge. When ground water is pumped out of the lower aquifer, four potential sources of recharge are available for replenishment. These sources are the Los Osos Creek valley, the upper aquifer, bedrock, and sea water. It was concluded that the upper aquifer is the primary source of fresh water recharge to the lower aquifer. The assessment also concluded that lower aquifer production west of the Los Osos Creek valley is currently close to 600 acre-feet per year more than the average fresh water inflow. This is confirmed by the evidence of sea water intrusion. The Los Osos Valley ground water basin is currently in an overdraft condition.

3. Discussion

What is the "safe yield" of a groundwater basin?

Safe yield is the amount of naturally occurring ground water that can be withdrawn from an aquifer on a sustained basis, economically and legally, without impairing the native ground-water quality or creating an undesirable effect such as environmental damage (C. W. Fetter, Applied Hydrogeology, Third Edition, 1994). "Undesirable effects" frequently cited as consequences of exceeding safe yield include:

- Reductions in streamflow; reductions in lake levels
- Drying of wetlands
- Subsidence of the land surface
- Degradation of water quality
- In coastal locations, seawater intrusion into the aquifer's fresh water in storage
- Lowering water levels leading to increase in pumping cost

What methods are used to estimate the safe yield of a groundwater basin?

Water level analysis**.** Groundwater levels in wells fluctuate over time representing the continuous adjustment of groundwater in storage to changes in recharge and discharge. Fluctuation of water levels is caused by several factors, including pumpage, recharge from direct precipitation and streamflow, infiltration of applied water and subsurface inflows and outflows. Water level analysis is based on empirical measurement of water levels in both production wells and monitoring wells. Levels in individual wells are compared to levels in other wells

throughout an aquifer to create a contour map showing elevations of the groundwater surface. Contour maps are useful for estimating the direction and rate of flow of groundwater within an aquifer. They are also used for estimating the amount of groundwater in storage. Observation of water levels over time can illuminate trends with implications about the long-term prospects for the basin.

Because annual recharge from precipitation is highly variable, long-term analysis of water level trends must include representative periods of above average and below average rainfall. Determination of trends is based on a period of observation that is not biased by an unusually dry or wet year or series of years.

Water budget analysis. Compilation of a water budget provides an estimate of each source of recharge and discharge to and from an aquifer. Estimates are based on a combination of empirical observation (rainfall data, stream flows, core samples, chemical analysis, well levels) and inference using logical assumptions. Water budgets are prepared to enable an understanding of the ways in which the groundwater basin adjusts to changes in recharge and discharge.

Since natural recharge from precipitation cannot be increased, an increase in discharge (pumping) can only be offset by an equivalent decrease in other forms of discharge (i.e., outflow to the ocean, to streamflow, to evapotranspiration, transfer from storage) and/or by supplemental recharge (imported water, control of recharge by dams). "Dynamic equilibrium" is the process by which an aquifer adjusts to a change in recharge or discharge.

The most common change to deal with is increased pumping. Depending on the transmissivity and storativity of the aquifer, achievement of a new equilibrium may not take place for decades following an increase in pumping. Equilibrium is achieved when the water removed by pumping is replaced by water that would otherwise have been discharged via ocean outflow or other sub-surface outflow such as outflow to a local stream or lake or to evapotranspiration. The cause and effect relationship between pumping and changes in various forms of discharge is not always appreciated, because pumping happens at the turn of a switch while the discharge adjustments take place over a very long time.

During the lengthy period of adjustment, a year or two of above average rainfall can temporarily reduce the size of pumping cones of depression and raise water levels in wells, giving a false impression that additional pumping can take place without a significant impact on the aquifer.

4. Estimate of Population Growth

The current population of the Los Osos Valley is approximately 14,500 persons. Build out has been estimated in the revised Estero Plan at 19, 713. Water management documents and studies have used this figure. However, the Los

Osos portion of the Estero Plan has been "taken off the table" by the County and will not be considered by the California Coastal Commission. The previous version of the Estero Plan is now being put back into place. This document has a build out population of approximately 28,000. This build out population figure is not accurate and this report recommends the figure be reduced as part of a future plan amendment.

These figures all probably overestimate the short term increase in population of the Los Osos area. A survey of potential subdivisions and vacant parcels yields a much lower figure. The sites known as Holland, Morro Shores, the "Farm" and other possible subdivision sites have the potential to support approximately 500 new housing units. In addition, a survey of the community indicates that there are approximately 450 - 500 vacant parcels that could be developed in the future. A total of 1000 units could support a population of approximately 2200 – 2500 additional persons. Another 2500 persons could be added over the long term.

5. Summary of Water Supply and Demand

The water supply of the Los Osos Valley is primarily based in the lower aquifer of the valley's groundwater basin. There have been several studies focused on Los Osos Valley ground water issues:

1. Brown and Caldwell (1974): Safe yield at 1300-1800 acre feet year (AFY). This is questioned in Cleath, July 2005, where the 1800 AFY is said to be consumptive use and not gross water production. The correct number, according to Cleath, should be closer to 3750 AFY.

2. Dept of Water Resources (1989): The DWR report determined a safe yield of 2200 AFY thru the use of a USGS model. Cleath adjusts this number to 3140 AFY.

3. URS Corporation (2000): Uses 3150 AFY as safe yield. URS used an updated USGS model.

4. Cleath and Associates (2002): Cleath used multiple methods to estimate safe yield at 3560 AFY in the LOCSD Master Water Plan.

5. Cleath and Associates (2005): This newer Cleath report includes a discussion of sea water intrusion. This issue has caused Cleath to reduce safe yield estimates to 3250 AFY to keep sea water intrusion at bay.

The studies have established a safe yield from each of the sub-groundwater sources. The safe yield (3250 AFY) used in the latest report for the CSD (Cleath and Associates July 2005) will be used in this RCS.

Table 1
Safe Yield Estimate
(from Cleath 2005)

Storage Area	Current Conditions	
	LOCSD Master Plan	2005 Water Management Plan
Upper Aquifer	**1150**	**1150**
Lower Aquifer	**1610**	**1300**
Creek Valley	**800**	**800**
TOTALS	**3560**	**3250**

The safe yield figure in Table of 3250 AFY will be used for this RCS. This safe yield includes provisions for reductions in sea water intrusion.

The safe yield from the basin is one side of the supply and demand equation. The demand side can be estimated by adding the amount of water pumped by all types of groundwater users including purveyors, private domestic wells and agricultural use. The following table from Cleath 2005 uses data from the period 1985-2001:

Table 2
Ground Water Production
1985-2001

Aquifer Zone	Purveyors			Private Domestic	Agricultural Irrigation*	1985-2001 average	2001 prod.
	Golden State	LOCSD	S&T				
A, B	0	0	0	40	0	40	40
C, alluvium	250	230	50	120	330	980	810
D	820	630	60	40	400	1950	2170
E	0	280	0	0	220	500	380
Total	1070	1140	110	200	950	3470	3400

Total water production from all portions of the groundwater basin totaled 3400 AFY. This 2001 number is 150 AFY more than the calculated safe yield from the basin. These figures indicate the basin was in overdraft in 2001. Overdraft continues today is shown by the continued sea water intrusion problem in the lower aquifer.

Water Demand In the Los Osos Valley

The population of the Los Osos Valley has stayed roughly the same or has trended slightly upward since 1990. Water use is also expected to trend upward as new development occurs outside the prohibition zone and existing dwellings are remodeled or demolished and replaced with larger more modern structures. Water demand in the CSD and Golden State Water Company service areas for the year 2006 is as follows:

Table 3
Water Usage by Purveyor

	LO CSD	Golden State	S and T Mutual
# of connections	2750	2681	175
Acre-feet/year	947 AFY	908 AFY	96.1 AFY
Use per connection	**0.34 AF**	**0.34 AF**	**0.55 AF**

The water use figures for the LOCSD and Golden State service areas are relatively low. The water use figures for the S&T Mutual Co are especially high. The difference in water usage per connection may be attributable to S&T's billing method. The company does not meter water usage; instead everyone is charged a flat rate. This type of billing does not encourage water conservation.

Staff has reviewed other variables to check this assumption. The lot sizes in the Sunset Terrace area (S&T's service area) are a uniform 6,000 – 6,500 sq ft. No unusually large parcels exist in the area that would cause per connection water usage to be higher than other suburban areas. An explanation can be sought through an analysis of community water demand. A survey of other communities' water usage per connection is as follows:

Table 4
Water Use in Other Communities

	San Luis Obispo	Templeton	Morro Bay	Pismo Beach	Nipomo	Golden State (Nipomo)
# of connections	14425	2490	5449	4776	3968	1480
Acre-feet/yr	6001 AFY	1395 AFY	1211 AFY	1927 AFY	2674 AFY	1164 AFY
Use/Connection	**0.41 AFY**	**0.56 AFY**	**0.22 AFY**	**0.40 AFY**	**0.67 AFY**	**0.78 AFY**

The examples of water use in other communities show a wide range of demand per connection. According to the Dept of Water Resources, water demand can be affected by several factors:

1. Size of lot
2. Size of dwelling
3. Climate
4. Soils
5. Rate structure
6. Land use
7. Household income

The range of demand per connection shown in Table 4 can be explained by several of these factors. The relatively low water demand numbers in Morro Bay and Los Osos are probably attributable to the smaller lot sizes that are found in all of our coastal communities; the marine influenced climate, and in the case of Morro Bay, the high percentage of second or vacation homes that are not occupied on a full time basis.

Other factors to be considered include land use patterns and population. The Cities of Pismo Beach and San Luis Obispo have relatively higher per connection water demand than the South Bay communities. Pismo Beach has many vacation homes that arte not occupied full time; however, their demand figure of 0.67 AFY per connection is relatively high. Similarly, the City of San Luis Obispo's demand figure is higher than expected. The water demand in these cities is probably due to 1) the number of hotels and visitors that put a higher demand on water resources; and 2) the substantial difference between the "night time" and "day time" populations of San Luis Obispo. Other communities in the county have become bedroom communities for the commercial center of the county.

Other factors that can explain the wide range in water demand include climate and lot size. According to the Dept of Water resources, 65% of water usage occurs outside the home. The communities of Templeton and Nipomo contain lots that are much larger than other areas of the County. Larger parcels use more water. North County communities can expect to use more water than coastal or south county communities due to the hotter summer climate.

The only figure that cannot seem to be explained by these factors is S&T Mutual Water Company. The S&T service area includes 175 connections in a small area of Los Osos near the Sea Pines Golf Course. The lot sizes, as mentioned above, are small (6,000 – 6,500 sq ft) and all connections are uniformly residential. The climate is marine influenced and soil conditions are similar to the rest of Los Osos. Of all factors that affect water demand in the list above, the only one that seems germane to S&T is rate structure. This mutual water

company is the only purveyor in the community that does not meter water use. All users are charged a flat rate independent of water usage. Metering of water usage at each connection is necessary in Los Osos in order to address the overdraft condition.

Conclusions Regarding Water Supply and Demand

The groundwater basin is currently in overdraft by at least 150 AFY. Sea water intrusion, which is fatal to a fresh water aquifer, is occurring in the Los Osos groundwater basin. Therefore, it is absolutely imperative that all measures are brought to bear to correct this problem. Lowering demand for water is generally the least expensive method to bring the basin back into equilibrium and to halt sea water intrusion. Therefore, while a RCS should look at measures to increase supply, this report shall focus on measures to reduce demand.

6. Measure to Increase Supply

A supplemental water source will eventually be needed for the area. The community is relatively isolated on the coast and is some distance from large surface water projects that could deliver supplemental water.

The few feasible options include:

1. Water wheeling through the City of Morro Bay (State water/desal)
2. Reclaimed water from the future wastewater treatment plant
3. Local Desalination facility
4. Conservation
5. Agricultural water

The water purveyors should review these options for supplemental water. Water wheeling through Morro Bay could include use of State Water or use of water produced by the existing desal plant. A pipeline connection from the City to Los Osos would be required. The pipeline route would probably be along South Bay Blvd and would experience coastal permitting and environmental difficulties. Water from a desal plant would probably cost upwards of $4000 per acre foot/year (Nipomo RCS – 2006). State water costs could run in the range of $1000- $2500 per acre foot per year.

Agricultural water users are located primarily on the east, southeast and northeast sides of the community. A GIS review of acreage in irrigated crops shows approximately 480 acres in irrigated agriculture. Crops in the area require between 1 to 3 acre feet of water per acre. A middle estimate of 2 acre feet per acre results in a water demand of 960 acre feet per year. This is similar to the estimate of agriculture water use by Cleath. Purchase of the water rights from these agricultural users will have serious general plan policy implications.

The use of reclaimed water from the future wastewater treatment plant should be considered. However, as a system design has not yet been completed and the areas of potential use of reclaimed water remain unclear, this option requires additional study. Also, tapping the upper aquifer to augment water supply is possible.

These are the acknowledged difficulties in securing a supply of supplemental water for the community. However, the existing information reviewed for this RCS clearly indicates a need for such a supplemental water supply. It appears that supplemental water is needed in the future even with a scenario of 0% growth and an aggressive water conservation program in place.

7. Measures to Extend Resource Capacity

Generally, the least expensive method to gain "new" water supply is through water conservation. According to the Pacific Institute (The Potential for Water Conservation in California, 2003):

> "Even without improvements in technology, we estimate that indoor residential use could be reduced by approximately 890,000 AF/yr – almost 40 percent – by replacing remaining inefficient toilets, washing machines, showerheads, and dishwashers, and by reducing the level of leaks. All of these savings are cost-effective and have important co-benefits like saving energy and decreasing the amount of waste water created."

It is questionable whether such a water savings figure is attainable in a single community. The Los Osos CSD's Water Management Plan assumes a 200 acre foot/year savings from water conservation by the year 2010. The Nipomo Water Management Plan assumes a 15% savings from water conservation measures. With water demand in Los Osos at 3400 AFY, a reasonable savings through conservation could be as high as, say 10% or 340 AFY. Even this amount of water savings is not enough to balance the demands on the aquifer and supplemental water will eventually be needed.

An aggressive water conservation program is required immediately due to the overdraft condition. A conservation program should require:

1. Mandatory retrofitting of all indoor plumbing fixtures including toilets, shower heads, sinks, washing machines.
2. A steeply tiered water rate structure that heavily penalizes excessive water use.
3. Prohibition of subdivisions that result in a net increase in water use.

4. Outdoor water use restrictions.
5. Metering of all water connections.

The Pacific Institute suggests the following rate structure:

Table 5. Recommended Tiered Rate Structure
Pacific Institute

Tier	Water Use (as percent of base allocation)	Price per Unit Used in Each Tier
Low Volume Discount	0-40%	Base Rate
Conservation Base Rate	41-100%	Base Rate
Inefficient	101-150%	2x Base Rate
Excessive	151-200%	4x Base Rate
Wasteful	201% and above	8x Base Rate

The CSD and Golden State Water Co have commenced changes in well production to decrease the amount of water taken from the lower aquifer. This is the first recommendation from the Sea Water Intrusion Assessment. The purveyors should continue these efforts.

The Los Osos groundwater basin is currently undergoing a process known as adjudication. The CSD filed the case for adjudication in February 2004. The water purveyors (LOCSD, Golden State Water Co, S&T Mutual Water Co and the County) are involved in this court case. In an adjudication case, the parties overlying the groundwater basin turned to the courts to settle disputes over how much groundwater can rightfully be extracted by each party.

Currently, the parties involved in the adjudication case are in discussion of a proposed interim stipulated agreement. The proposed agreement is not yet final and is not a public document. It is not known at this time what effect the stipulated agreement will have on the water resource in the Los Osos groundwater basin.

8. RECOMMENDED LEVEL OF SEVERITY

The county General Plan's *Framework for Planning* contains a discussion of the objectives, procedures and criteria for levels of severity of the Resource Management System. Regarding water resources, the RMS indicates that *"Level of Severity III exists when water demand equals the available resource; the amount of consumption has reached the dependable supply of the resource. A*

Level III may also exist if the time required to correct the problem is longer than the time available before the dependable supply is reached."

Table 6 RESOURCE DEFICIENCY CRITERIA FOR LEVELS OF SEVERITY		
Level I	**Level II**	**Level III**
Projected consumption estimated to exceed dependable supply within 9 years	7 year lead time to develop supplementary water for delivery to users	Resource is being used at or beyond its estimated dependable supply or will deplete dependable supply before new supplies can be developed

This Resource Capacity Study confirms that for the Los Osos community, water demand presently exceeds the dependable yield. Therefore, Level of Severity III is recommended for the water resources in Los Osos.

9. Recommended Actions

The Resource Management System includes three "action requirements" that accompany a Level of Severity III determination:

If Level III is found to exist, the board shall make formal findings to that effect, citing the basis for the findings, and shall:

1. *Institute appropriate measures (including capital programs) to correct the critical resource deficiency, or at least restore Level II so that severe restrictions will be unnecessary.*
2. *Adopt growth management or other urgency measures to initiate whatever restrictions are necessary to minimize or halt further resource depletion.*
3. *Enact a moratorium on land development, or other appropriate measures, in the area that is affected by the resource problem until such time that the project provides additional resource capacity to support such development.*

The following measures are recommended for implementation:

1. Measures to correct the resource deficiency.

The county can initiate measures that involve the land use and building permitting process. However, since the county is not a water purveyor in Los Osos, some of these measures will need to be undertaken by the LOCSD, Golden State Water Company and S&T, acting separately or as part of a coordinated effort.

Measures to be undertaken by water purveyors:

a. Continue to immediately implement the measures recommended in the Sea Water Intrusion Assessment.
b. S&T Mutual Water Co. should install meters and adopt an ascending water rate structure as described above.
c. All water purveyors should immediately adopt an ascending water rate structure as described above.
d. All water purveyors should adopt mandatory retrofit measures that will reduce water demand by 15% by the year 2010 compared to 2001 usage.
e. Secure supplemental water supplies in sufficient quantity, when combined with conservation measures, to meet demand at projected buildout.

2. Land development measures:

Measures to be undertaken by the County:

f. Prohibit new subdivisions that result in the net increase in water usage from the basin.
g. Institute water conservation requirements for parcels outside of water purveyor service areas that mirror the efforts undertaken by purveyors within their service areas.
h. Adopt an ordinance requiring all water purveyors with 5 or more connections to meter individual connection water use.
i. Reduce the build out figure for Los Osos in the Estero Area plan. From the present 28,000 to 19,713.

References:

Los Osos Community Services District. *Sea Water Intrusion Assessment and Low Aquifer Source Investigation of the Los Osos Valley Ground Water Basin San Luis Obispo County, California.* October, 2005.

Los Osos Community Services District. *Water Management Plan for the Los Osos Valley Ground Water Basin.* July 2005

San Luis Obispo County Department of Planning and Building. *Resource Capacity Study: Water Supply in the Nipomo Mesa Area.* October, 2004.