Los Osos/Baywood Park

Comprehensive Resource Management Plan

A Plan by and for the Community

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Solution Group

November 24, 1997

Please direct questions regarding this Plan in writing to:

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Preparation of this Plan was the volunteer effort
of interested citizens of
the Los Osos/Baywood Park Community,
organized as

Solution Group

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Frank Freiler, B.S., Industrial Technology
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Stan Stein, Architect

Thanks ...

The Solution Group is deeply indebted to the following firms and individuals who have contributed their services in developing this Plan at pro-bono or reduced rates, and are helping this community achieve its goal of fair and equitable representation with governmental interests in this issue. We recommend the first three firms be retained for professional design services when this Plan is accepted.

To: Dr. William Oswald, Ph.D.; Fellow, ASCE
Dr. Bailey Green, Ph.D.
Oswald/Green, LLC
Engineers, Scientists, Planners
Richmond, California
(510) 231-5682

for their renowned expertise in AIWPS™ treatment systems.

To: Mr. Michael Parker, Civil Engineer
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for his nationally known expertise in STEP systems

To: Mr. William Callaway, President; Fellow, ASLA
Mr. James Lee, Principal
Mr. Jeff Bergfeld, Associate
Ms. Nancy Conger
SWA Group
Sausalito, California
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for their international expertise in land planning and landscape architecture.

To: Professor Dan Panetta
Principal Investigator
Energy Efficient Resource Recovery Facility
Cal Poly
San Luis Obispo, California
(805) 756-2075

for his extensive knowledge in alternative integrated infrastructure systems.

Executive Summary ...

This is a Comprehensive Resource Management Plan which reduces the combined cost of land acquisition and construction of the wastewater treatment program for Los Osos/Baywood Park by approximately $30 million dollars, as well as solving other community needs.

The maximum monthly unit assessment under the Plan is $38.75.

The monthly cost per unit for operating the Septic System Maintenance/ Management Program is estimated at $5.75 and the monthly financing cost for land acquisition, construction of the facilities, and connection to the collection system is estimated at $33.00 for a Dwelling Unit Equivalent. Financing is anticipated at 2.8% interest from the State Revolving Fund, amortized over 20 years. The total monthly cost for a single family home in the collected regions would be $38.75. Total monthly cost for other unit types is proportionally less, and is based on benefits received from the Plan.

The Community Plan addresses multiple community problems with pragmatic, multi-faceted solutions. It:

- is affordable by the Community
- serves the entire Community and spreads the costs for the Plan proportionately over the entire Community for benefits received;
- provides for wastewater treatment and reclamation to allow full build-out of the Community to a projected population of 22,500 in 2019 without needing to rely on outside water resources or importation;
- provides for recharge to both the lower and upper aquifers;
- harvests the upper aquifer water from low-lying areas of the Community and returns that water to the potable water supply while lowering ground water tables;
- retains existing septic tank infrastructure in place and operation;
- retains existing septic tank and effluent systems in operation where there is separation of more than 30 feet from surface to ground water;

- establishes a Septic System Maintenance/Management Program over the entire community;
- utilizes a Septic Tank Effluent Pump system for collection in the low-lying regions of the Community, the commercial areas, the mobile home parks, and future subdivisions;
- utilizes an Advanced Integrated Wastewater Pond System™ for wastewater treatment which is based on natural systems, is efficient to operate and maintain, and which does not require sludge removal;
- provides tertiary, disinfected level treatment of treated wastewater;
- provides nine acres of landscaping at the Advanced Integrated Wastewater Pond System™ site and 20 acres of landscaping at the recharge site;
- provides for future development opportunities of community park and open space, senior housing, multi-family housing, medical/office facilities, government center, roads and surface storm drainage retention at the town center;
- reduces or eliminates issues related to health, environment and habitat found in the County-proposed plan;
- provides optional opportunities for park development.

Introduction ...

The wastewater treatment issue for Los Osos/Baywood Park has been ongoing for 20 years without a viable solution. Now, a multi-faceted solution has been developed which solves multiple problems and which is acceptable to, and supportable by, this community.

This Plan has been prepared by parties long associated with this issue. The Solution Group includes prominent members of the original CSA #9 Technical Advisory Committee and Blue Ribbon Committee, Citizens for Affordable Wastewater Systems (CAWS), Taxpayers Against Percolation Ponds Site (TAPPS), Community Services Area #9 (CSA #9), Los Osos Community Advisory Council (LOCAC), local Realtors, and other interested parties.

The purpose of this Plan is to recommend to the County of San Luis Obispo a solution which will resolve the wastewater issue and other community problems, which will be more affordable to the community, and which will be supported by the community.

While this proposal may not meet with the full acceptance of all governmental agencies nor with the full acceptance of all interests in the community, it is a solution which can be supported by the majority of the residents. Some compromise and negotiation may be required in order to reach mutual agreement between the affected parties.

Since there is no formal governmental entity which represents the specific community of Los Osos/Baywood Park, the following signatories represent a genuine cross-section of community leadership. Our signatures are an expression of confidence that this proposal is reasonable, economically viable, and worthy of pursuing to finally resolve the wastewater treatment issue in a way that sustains, rather than degrades, our community. This Plan solves multiple community needs on an equitable and sustainable basis.

This proposal has as its primary goal <u>managing and maintaining a sustainable drinking (potable) water supply in sufficient capacity to allow full build-out of the Community without importing water from other sources</u>. Treatment of wastewater is one part of this solution.

Water supply is, and will continue to be, a critical issue for development within our community. Reclaiming our treated wastewater resource and restoring it to the Community's groundwater basin for sustainable water

supply to accommodate full build-out of the community must be resolved as part of this solution.

We urge that this proposal be implemented by the County and approved by other governmental entities with jurisdiction over this issue.

Les Bowker

Gary Karner

Wade Brim

(not available at press time)
Stan Stein

Frank Freiler

David Mayfield

Jerry Gregory

Pandora Nash-Karner

Geof Gurley

Paul Reynolds

Stan Gustafson

Thomas Ruehr

Gordon Hensley

Bob Semenson

Virgil Just

Roger Shields

Community Objectives ...

- Address real and perceived community problems with a pragmatic, comprehensive, multi-level, coordinated Plan

providing solutions that:

- are currently economically affordable for our community;
- are sound investments in our community's future;
- sustain our environment and sense-of-place;
- are supported by the Community;
- provide water resources for full build-out of our community;
- view wastewater as a community asset rather than as a liability;
- can be implemented quickly using completed studies and engineering data with additional engineering and design from qualified outside professionals.

Community Plan Objectives ...

The following objectives are encompassed within the Los Osos/Baywood Park Comprehensive Resource Management Plan:

1) *Establish a Septic System Maintenance Management Program (SSMMP) over the entire Community area.*

2) *Establish a Collection/Treatment System to collect and treat effluent from septic tanks in areas of the Community with less than 30 feet vertical separation from ground water, and in the commercial areas, mobile home parks, and potential lands currently zoned for subdivision requiring collection.*

3) *Establish a treated waste-water Recharge System which will effectively return this resource by recharge to the "Lower Aquifer" and to subsurface locations in the "Upper Aquifer", therefore permitting harvesting and return of water to the potable water supply of the Community. This will provide a sustainable water supply to the Community for full build-out potential without relying on water resources outside our community.*

4) *Install harvesting well lines in effluent-collected low areas to retrieve the water resource and to control ground water levels.*

Options:

Option A: Construct a 200 acre-foot capacity storage lake for treated effluent and distribution system up-watershed for agriculture interests.

Option B: Acquire land and develop community park land adjacent to and around the lake in Option A.

Option C: Acquire land and develop constructed wetlands in conjunction with Options A and B, above.

Note: Where "*full build-out of the community*" is mentioned in this document, it means an anticipated population of 22,467 in 2019, per Chapter 3, Estero Area Plan Update Draft, August, 1997.

The Elements of the Community Plan ...

Septic System Maintenance/Management Program
Collection System
Treatment System
Recharge System
Harvesting System

SSMMP ...

1) Establish a Septic System Maintenance / Management Program (SSMMP) over the entire community area.

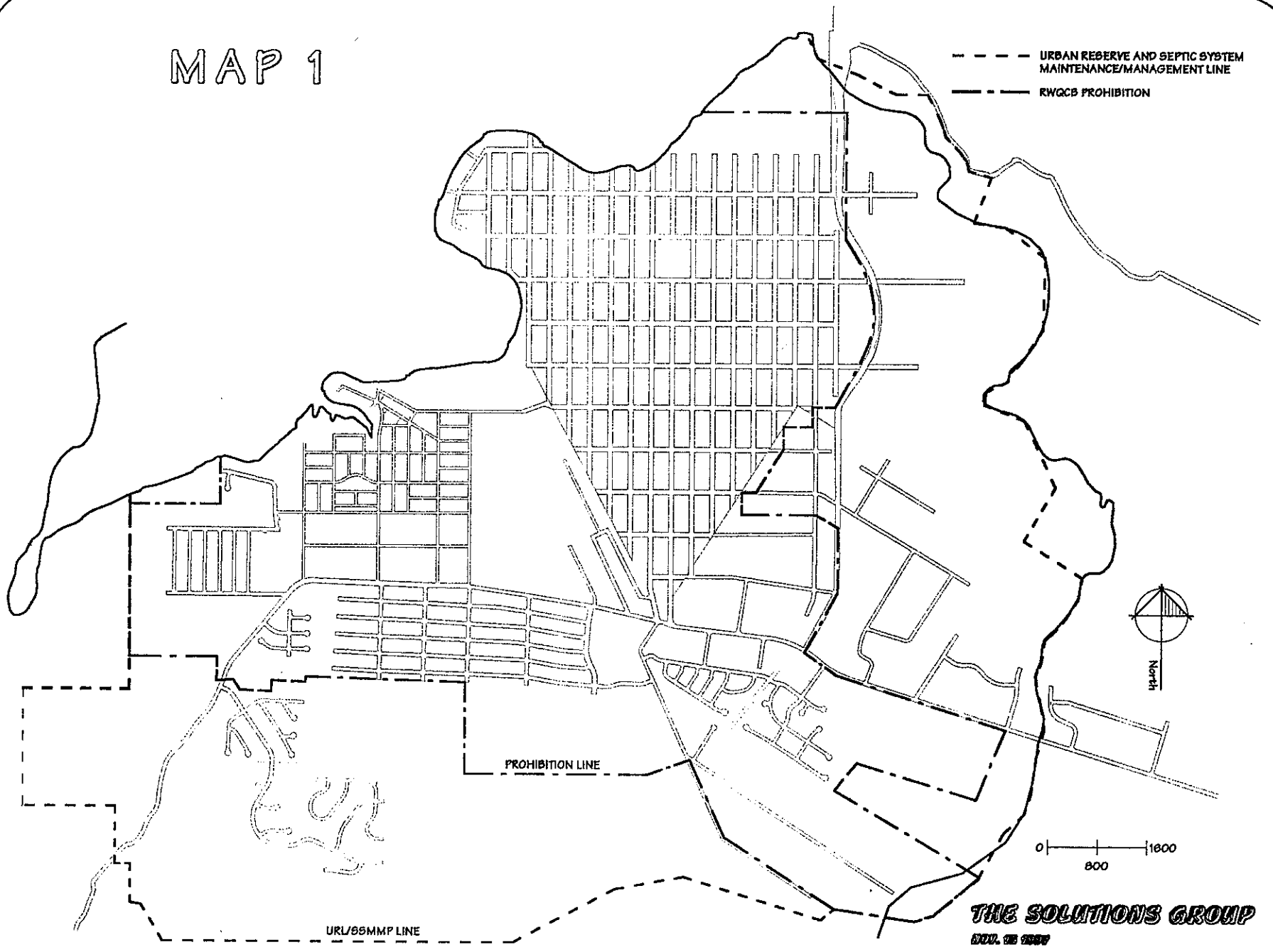
The SSMMP would extend over the entire community as defined by the Urban Reserve Line (URL) and would be the basis for assessment for the entire costs of all facilities and functions contained in the Plan. (See Map #1 on next page for SSMMP area).

The functions of the SSMMP are as follows:

- Periodic inspection of all septic tanks and leaching systems;
- Maintain, repair and/or replace tanks and leaching systems to conform with State and County requirements;
- Collection and transport (by truck) of septage from septic tanks to septage treatment facility;
- Provide, install and maintain lift pumps from residences where existing septic tanks are below collection system elevations;
- Provide information on proper septic system maintenance and household waste management to residences served by the SSMMP;
- Promote conservation of water supply through providing reduced-cost low-flow plumbing devices and provide incentives for property owners to retrofit to low-flow plumbing devices;
- Provide free or reduced-cost biodegradable toilet paper to reduce lignin-based toilet paper sludge buildup in septic tanks;

Of primary importance in this Plan are the following points: the preservation of quality; the sustainability of resource, and assurance of quantity of the water supply of the community to enable full build-out.

All members of the community draw on this water resource. Consequently, it is in the community's best interest that this resource be carefully managed and preserved. All members of the community should share in the cost of providing and sustaining this essential resource.



SEPTIC SYSTEM MAINTENANCE/MANAGEMENT REGION

SSMMP ...

At the August 3, 1995 meeting of the SLO County Board of Supervisors, staff was directed to "begin formation of an Onsite Wastewater Disposal Zone (OWDZ) to serve all or part of the community if septic tanks and/or septic systems will continue to be part of a combined technology system." The same motion included an instruction to Engineering Staff to "work with the CSA-9 Advisory Board on creation of a 'Sanitary District' function to eventually assume responsibility for wastewater collection and treatment systems developed for the Los Osos/Baywood Park community."

The SSMMP provides similar, but expanded, functions and benefits. It would be placed under CSA-9 for formation of the SSMMP and CSA-9 would be responsible for construction, management, maintenance and operation of the elements of this Plan.

The SSMMP would be responsible for inspection of all septic systems constructed prior to 1978 (prior to the date the County required permits and inspection of septic systems) before they would be accepted into the Program. Should inspection reveal malfunctioning systems, the cost of correction to bring them to SSMMP performance standards would be borne by the owner. After acceptance into the SSMMP, the costs of maintenance and periodic inspections would be borne by the Program.

Leaving existing septic tanks in place as primary collectors retains many millions of dollars in infrastructure already in place. Allowing residences to remain on septic tank/leaching systems in areas where there is greater than 30 feet vertical separation from surface to ground water retains this infrastructure and eliminates collection infrastructure expense, a major cost of the wastewater treatment system.

To provide equitable benefit to all entities subject to assessment for the SSMMP, the SSMMP would provide services to them in an equitable manner, whether the individual home or commercial site is collected for treatment or remains on a viable septic tank/leaching system.

SSMMP ...

The following are recommended as equitable proportions of assessment of costs for the SSMMP:

	Collection	Treatment or Service	Recharge	Management	Total
Equitable value for service:	50%	25%	12.50%	12.50%	
Application:					
Within RWQCB[1] Prohibition Zone					
Collected DUE's [2]	✓	✓	✓	✓	100%
Non-Collected DUE's		✓	✓	✓	50%
Outside RWQCB Prohibition Zone					
DUE's not on private well			✓	✓	25%
DUE's on private well				✓	12.50%

Following are the proportions of the DUE applicable, based upon the chart above:

	Single Family Unit	Each Multi-Family Unit	Each Mobile Home Unit	Commercial
Within RWQCB Prohibition Zone				
Collected DUE's	100.00%	75.00%	50.00%	100.00%
Non-Collected DUE's	50.00%	37.50%	N/A	N/A
Outside RWQCB Prohibition Zone				
DUE's not on private well	25.00%	N/A	N/A	N/A
DUE's on private well	12.50%	N/A	N/A	N/A

Notes:
(1) RWQCB = Regional Water Quality Control Board
(2) DUE = Dwelling Unit Equivalents, where:

Single Family	= 1
Multifamily	= .75
Mobile Home	= .5
Commercial	= 1 per 10,000 sq. ft. land

COMMUNITY PLAN COLLECTION REGIONS IN SSMMP

Collected Units within RWQCB Prohibition Area

Region	Single Family		Multi-family		Mobile Home		Commercial	Million
	Units	DUE's (1)	Units	DUE's	Units	DUE's	DUE's	Gal./Day (2)
I	1422	**1422**	92	**69**	0	**0**	**56** (3)	0.329
II	843	**843**	1026	**770**	164	**82**	**348** (4)	0.435
III	100	**100**	0	**0**	0	**0**	**0**	0.021
IV	0	**0**	0	**0**	326	**163**	**0**	0.035
Totals	2365	**2365**	1118	**839**	490	**245**	**404**	**0.820**

Uncollected Units Within RWQCB Prohibition Area

	Single Family		Multi-family		Mobile Home		Commercial
	Units	DUE's	Units	DUE's	Units	DUE's	DUE's
Totals	2449	2449	23	17.25	0	0	0

Uncollected Units Between RWQCB Prohibition Area and SSMMP Boundary (Urban Reserve Line)

	Single Family		Multi-family		Mobile Home		Commercial
	Units	DUE's	Units	DUE's	Units	DUE's	DUE's
On Commercial Water Supply	364	**364**	0	**0**	0	0	0
On Private Wells	143	**143**	0	0	0	0	0
Totals:	507	**507**	0	**0**	**0**	**0**	**0**

Grand Totals, All Regions Within SSMMP Boundary (URL)

	Single Family		Multi-family		Mobile Home		Commercial
	Units	DUE's	Units	DUE's	Units	DUE's	DUE's
Grand Totals:	**5321**	**5321**	**1141**	**856**	**490**	**245**	**404**

Notes:

(1) DUE = Dwelling Unit Equivalents, where:
Single Family = 1
Multifamily = .75
Mobile Home = .5
Commercial = 1 per 10,000 sq. ft. land

(2) Gallons per day per DUE = DUE x 2.5 persons x 85 gallons per day per person = 213 gpd per DUE
(3) Region I has approximately 557,500 sq. ft. of commercial land, which equals 56 DUE's
(4) Region II has approximately 3,484,800 sq. ft. of commercial land, which equals 348 DUE's

All new subdivisions within the Prohibition Area which have lots less than 1 acre will be required to connect to the septic tank effluent collection system.

All present and future subdivisions within the Prohibition Area that meet Basin Plan, that is, lots with minimum of 1 acre, and with 30 feet or greater separation to ground water, will not be required to connect to septic tank effluent collection system.

Properties outside the Prohibition Area will not be required to connect to the septic tank effluent collection system.

SSMMP Estimated Costs

Collected Regions:	# DUE's	Fail Rate /Yr.	Repair or Upgrade	Annual Inspections (5)	Failure Reinspections (6)	Septage Removal (7)
Single Family	2365	1.00% (1)	$59,125 (3)	$59,125	$5,913	$47,300
Multi-Family	839	1.00% (1)	$20,975 (3)	$20,975	$2,098	$16,780
Mobile Homes	245	1.00% (1)	$6,125 (3)	$6,125	$613	$4,900
Commercial	404	1.00% (1)	$10,100 (3)	$10,100	$1,010	$8,080
Non-Collected Regions:						
Single Family	2449	0.53% (2)	$32,449 (4)	$61,225	$3,245	$48,980
Multi-Family	17	0.53% (2)	$225 (4)	$425	$23	$340
Single Family, (Comm'l Water)	364	0.53% (2)	$4,823 (4)	$9,100	$482	$7,280
Single Family, (Private Wells)	143	0.53% (2)	$1,895 (4)	$3,575	$189	$2,860
Total DUE's:	6826					
Total Costs: (see notes)			$135,717	$170,650	$13,572	$136,520

Two Year Pre-1978 Inspection Program

Annual Cost	1440	$36,000
Two-Year Program Cost	2880	$72,000

	Estimated Annual Costs	Annual Cost per DUE
Year One	$492,459	$72
Year Two	$492,459	$72
Year Three/ after	$456,459	$67

Notes:

(1) Assumed failure rate

(2) Failure rate based on San Lorenzo 1995 Waste Water Management Report

SSMMP ...

Notes, (con't)

(3) Based on 1% failure rate at $2500 cost per failure
(4) Based on .53% failure rate at $2000 cost per failure
(5) Based on inspection every 5 years at $125 per inspection
(6) Based on re-inspection each year for two years after failure at $125 per inspection
(7) Based on removal to treatment plant every 5 years at $100 per removal
(8) Based on $125 per inspection

SSMMP ...

Pre-1978 Septic tank/leaching systems:

There were approximately 2880 DUE units installed prior to 1978, based on the population in Los Osos prior to 1978. A two-year inspection and correction program for those units installed prior to 1978 is proposed. These units would be inspected by the SSMMP, and necessary repairs for acceptance into the SSMMP would be paid by the owner prior to acceptance.

The two year program assumes 6 pre-1978 DUE units being inspected each day, assuming a 5-day week; therefore, 233 inspection days per year. Approximately 1400 pre-1978 DUE units would be inspected each year.

SSMMP-accepted septic tank/leaching systems:

The failure rate of the Septic Tank Effluent Pumping (STEP) collected system units was assumed to be 1%, which may be on the conservative side. An average cost for STEP failure repair is carried at $2500. However, a 10% failure/repair of existing septic tanks in the collected areas is anticipated and included in the Collection System Preliminary Estimate of Construction Costs.

The failure rate of septic tanks/leaching systems in the non-collected areas was assumed to be 0.53% based upon data from the Waste Water Management Plan for the San Lorenzo River Watershed[1]. An average cost for failure repair on these systems is carried at $2000.

Septic tanks or septic tank/leaching systems failing after acceptance into the SSMMP would be repaired. They would be inspected each year after the repair for two years; thereafter, they would return to the normal cycle of inspection, every 5 years, concurrent with the septic tank pumping cycle.

[1] Wastewater Management Plan for the San Lorenzo River Watershed, County of Santa Cruz Health Services Agency, Environmental Health Service, February 1995.

Collection ...

2) Establish a Collection/Treatment System to collect and treat effluent from septic tanks in areas of the Community with less than 30 feet vertical separation from ground water, and in the commercial areas, mobile home parks, and potential lands currently zoned for subdivision requiring collection.

This proposed collection system retains 100% of the existing septic tank infrastructure (and invested cost of approximately $14,310,000) in place as primary collector of solids (septage). Septic tanks provide primary anaerobic breakdown of solid matter. Retaining the septic tanks and collecting and transporting only effluent reduces the size of collection pipe lines and pumping facilities in the collection system. The SSMMP will provide septage removal and transport to the proposed treatment plant for treatment on-site.

Elimination of septic leaching in the "low" areas permits harvesting of high ground water in those areas, lowering ground water tables and reducing potential flooding in those areas. The harvested water from the upper aquifer can be returned to the potable water supply of the Community.

Approximately 993 acres of the Community will be collected under the proposed Community Plan, compared to 1401 acres in Phase I of the County Plan and 261 acres in Phase II of the County Plan. The collection area in the Community Plan is 60% of the area proposed for collection in Phases I and II of the County Plan (1662 acres) and provides for full build-out of the community to population 22,500 in 2019.

Substantial savings are achieved 1) in reducing the collection area to critical areas of the Community, 2) collecting and transporting only effluent liquids, and 3) reducing the total collected and treated volume to approximately .82 million gallons per day.

STEP System Technology[2]

The collection system proposed is called Septic Tank Effluent Pump (STEP) pressure sewer system. STEP technology has been used since the late 1960s in the US. Examples of operating STEP systems may be found in Yuba City, CA; Montcalm County, MI; Delpca, MI; Brooks, OR; Elkton, OR; Glide, OR; Claron, WA; Lear Lake, WA; Newport WA; and Olympia, WA.

In this system, raw household sewage enters a watertight septic tank which removes about 90% of the grease, 70-90% of the suspended solids, and 50-80% of the biological oxygen demand (BOD). The partially treated effluent then flows to a pump vault within the tank (or separate pump tank in older systems) where a submersible pump - typically one-half horsepower - conveys the effluent to the collection system. The pumps are usually controlled by level sensors which cause the pumps to discharge approximately 50 gallons per dose.

A typical septic tank provides 100-200 gallons (approximately 3 days) of reserve storage capacity for use during system or power failures.

STEP units generally use above-ground electrical panels which contain the pump control and visual alarm circuits. These panels may be free-standing units above the pump vault or may be mounted on the exterior wall of the house.

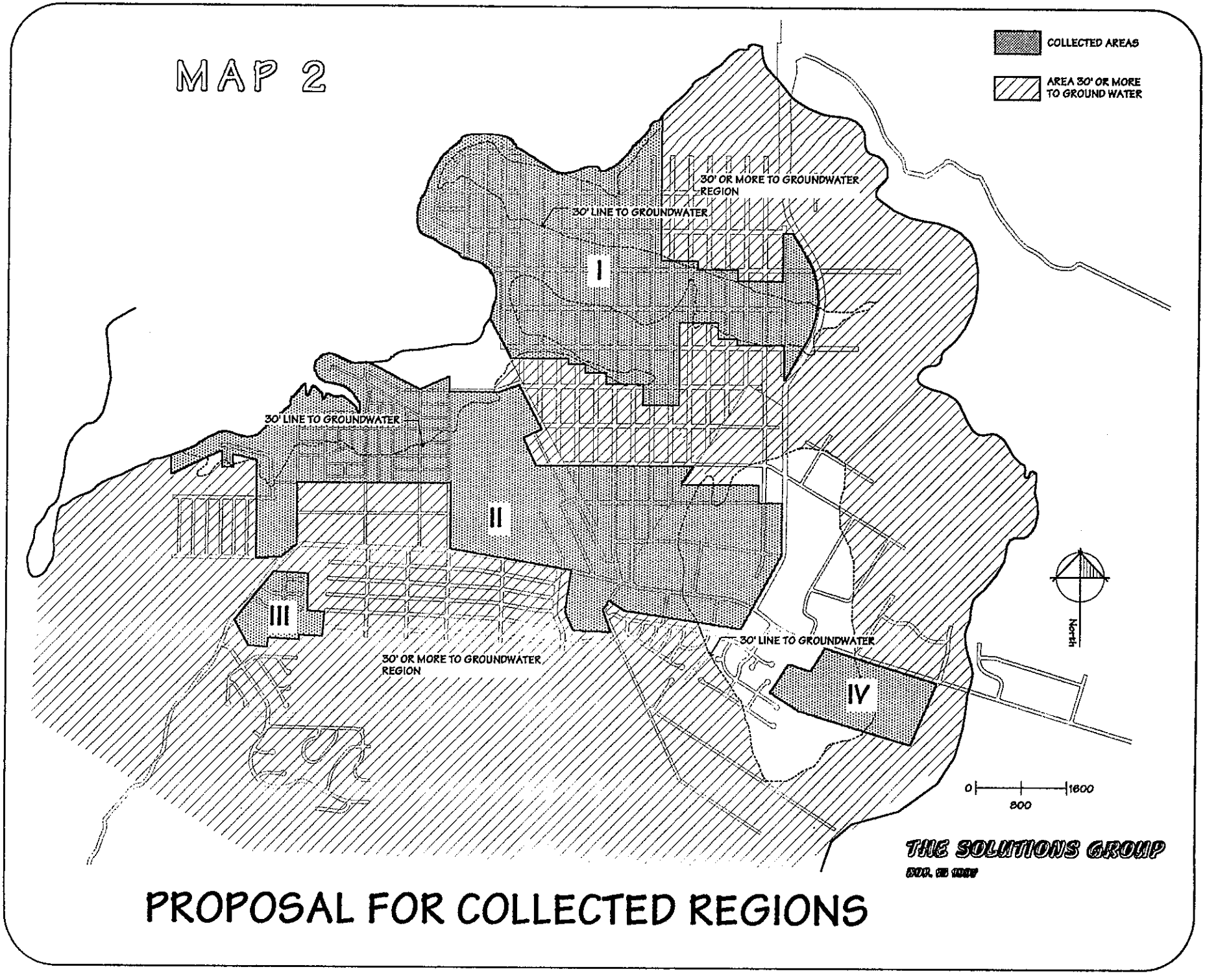
Because this system uses plastic pipes rather than conventional clay or concrete pipes, the pipes are more likely to remain watertight. Watertight design and construction is essential for septic tanks, pump tanks, risers, and other system components. Too much water in the system can reduce its life, adding to the community's costs.

Piping can be plastic and smaller in diameter, and the system does not need to rely on gravity to operate. Thus, trenching depth can be reduced, and piping can better follow natural contours of the land or routed around obstacles.

Further technical detail on STEP systems can be found in the Appendix.

See Map #2 on the next page for the proposed STEP collection area.

[2] Excerpted from "Small Flows Technology", Volume 11, Number 4, Fall, 1997.



PROPOSAL FOR COLLECTED REGIONS

STEP Collection Area Estimate

Collected Units within RWQCB Prohibition Area

Region	Single Family			Multi-family		Mobile Home		Commercial		Million
	Units	DUE's	(1)	Units	DUE's	Units	DUE's	DUE's		Gal./Day (2)
I	1422	1422		92	69	0	0	56	(3)	0.329
II	843	843		1026	770	164	82	348	(4)	0.435
III	100	100		0	0	0	0	0		0.021
IV	0	0		0	0	326	163	0		0.035
Totals	2365	2365		1118	839	490	245	404		0.820

Total DUEs in Collected Regions: 3,853

Notes:

(1) DUE = Dwelling Unit Equivalents, where:

Single Family	= 1
Multifamily	= .75
Mobile Home	= .5
Commercial	= 1 per 10,000 sq. ft. land

(2) Gallons per day per DUE = DUE x 2.5 persons x 85 gallons per day per person = 213 gpd per DUE

(3) Region I has approximately 557,500 sq. ft. of commercial land, which equals 56 DUE's

(4) Region II has approximately 3,484,800 sq. ft. of commercial land, which equals 348 DUE's

All new subdivisions within the Prohibition Area which have lots less than 1 acre will be required to connect to septic tank effluent collection system.

All present and future subdivisions within the Prohibition Area which meet Basin Plan, that is, lots with minimum of 1 acre, and which have 30 feet or greater separation to ground water, will not be required to connect to septic tank effluent collection system.

All properties outside Prohibition Area will not be required to connect to septic tank effluent collection system.

Collection ...

Collection System Preliminary Estimate of Probable Construction Costs
Michael Parker, CE
i.e. Engineering, Roseburg, OR

ITEM	ESTIMATED QUANTITY	UNIT COST	SUBTOTAL
STEP			
Pressure Sewers			
2-inch diameter	20,025 lf	$12.00/lf	$240,300
3-inch diameter	68,850 lf	$13.50/lf	$929,475
4-inch diameter	64,275 lf	$15.00/lf	$964,125
6-inch diameter	6,900 lf	$17.00/lf	$117,300
8-inch diameter	9,525 lf	$20.00/lf	$190,500
Division Valves	284 ea.	$1,250.00 ea.	$355,000
Cleanouts	178 ea.	$1,500.00 ea.	$267,000
SUBTOTAL			**$3,063,700**
Pressure Sewer Pump Facilities			
Single Family STEP Units	1,921 ea.	$3,500.00 ea.	$6,723,500
Commercial STEP Units	245 ea.	$5,000.00 ea.	$1,225,000
Large STEP Units	10 ea.	$10,000.00 ea.	$100,000
Multi-family STEP units	1,118 ea.	$1,500.00 ea.	$1,677,000
Main (12-in. diam.)	7,200 lf	$35.00/lf	$252,000
AV/AR Assembly	2 ea.	$3,500.00 ea.	$7,000
ARVs	4 ea.	$3,500.00 ea.	$14,000
Blowoffs	3 ea.	$1,980.00 ea.	$5,940
SUBTOTAL			**$10,004,440**
TOTAL-COLLECTION SYSTEM			**$13,068,140**
10% Contingency			$1,306,814
SUBTOTAL			$14,374,954
15% Engineering & Administration			$2,156,243
SUBTOTAL CONSTRUCTION			$16,531,197
TOTAL ESTIMATED COST			**$16,531,197**

Notes: lf = linear feet; ea. = each

Note that this cost estimate includes the STEP system connections to individual existing septic tanks in the Collection Area in the amount of $12,655,617, including 10% contingency and 15% Engineering and

Collection ...

Administration costs. These costs anticipate a 10% septic tank failure/replacement of existing septic tanks in the Collection Area.

The County Plan requires connection costs to the County sewage treatment system, and for numerous grinder pumps where pumps are required, to be paid by the individual site owner. The County Plan would impose an additional cost to be paid by the site owner for decommissioning septic tanks.

Most of these existing infrastructure costs (with an estimated value of approximately $14 million), are already in the ground at no cost to the County, and are maintained in service under the Community Plan.

Treatment System

Advanced Integrated Wastewater Pond System (AIWPS™) technology is recommended for this treatment system. AIWPS™ technology is based primarily on natural systems rather than on mechanical systems. Constructed primarily of earthworks, AIWPS™ are easier, faster and less expensive to construct than conventional sewage treatment plants. They are also less energy-intensive and labor-intensive to operate and maintain. They have far longer plant life expectancy over mechanical systems.

The proposed AIWPS™ treatment plant will treat effluent to conform to tertiary treatment with disinfection to permit the widest choice of options for re-use and re-charge. Design, construction and management of treatment system must be by qualified personnel, knowledgeable in this technology.

Treatment plant size in the Community Plan is reduced to approximately one million gallons per day (1 Mg/d) in all weather conditions for full build-out of the Community (as compared with 2.05 Mg/d, Peak Dry Weather Flow (PDWF); and 5.23 Mg/d, Peak Wet Weather Flow (PWWF) in the current County-proposed Plan).

The treatment plant will receive and effectively treat septage from septic tanks in the SSMMP on-site at the treatment facility as an integral part of the AIWPS™. The treatment plant potentially could receive and treat sludge and septage from sources outside the SSMMP for revenue generation if quality of the received material can be monitored effectively. The plant would need to be sized accordingly if this option were chosen.

The current County Plan does not address or resolve, nor does it include costs for, sludge treatment, transportation or land costs associated with sludge disposal.

Siting

The preferred location for the AIWPS™ treatment system is in Tract No. 1643, consisting of approximately 54 acres located north of Los Osos Valley Road and west of the County Park, Community Center and Library. In addition, it is recommended that the "Williams Brothers" parcel of approximately 11 acres be acquired. The total site would be approximately 65 acres.

Treatment ...

This site is preferred because of a reduced level of environmental restrictions and its location in the central part of the community, reducing collection system and recharge piping runs. While land costs are higher than other locations, savings in the total Plan costs will offset these land acquisition costs. In addition, further development opportunities are explored to create offsetting income for the waste water treatment system and other elements of the Community Plan.

The AIWPS™ treatment system is expected to require approximately 25 acres of this site. Integrated with the AIWPS™ system on the remaining area of the site will be a combination of other uses, including, potentially, park/passive recreation development, a small government center, medical/office development, senior citizen housing and multi-family residential.

A treatment system such as this is frequently viewed as a community asset rather than liability. When properly designed and maintained, AIWPS™ systems visually are quiescent, pleasant ponds which do not produce noxious odors or pathogens, and, instead, naturally process odors, pathogens and potential disease-producing organisms into non-noxious substances. Through natural processes, they produce methane gas which can be harvested to produce energy to help supply plant energy needs; they produce nutrient-rich algae which is harvested and mixed with grains to produce a high-level nutrient-rich feed for poultry or animals; and they produce tertiary level, disinfected final wastewater, a resource for re-introduction to the Community water supply.

This technology is not "new" and has successfully existed around the world for over 60 years, even in climates much more severe than that of Los Osos. The climate and soils in Los Osos are suitable for this technology. An excellent example of this type of plant is located in St. Helena, California, and has been operating for the past 31 years. Other examples of AIWPS™ systems in California may be found in the municipalities of Esparto (1969); Napa (1969); Bolinas (1972); Hollister-Municipal (1977); Hollister-Industrial (1975); Beringer Winery, St. Helena, CA (1987); and Delhi, CA (under construction-1997). Successful, operational AIWPS™ are located around the world.

The Elements of an AIWPS™:

Facultative Pond(s)
Fermentation Pit(s) in the Facultative Pond
Septage Processing Facility
High Rate Pond(s)
Algal Settling Pond(s)
Final Treatment Facility
Final Polishing of Treated Wastewater
Storage (retention)

Facultative Pond

The Facultative Pond is the first in this pond series and it receives the collected effluent from the Collection Regions.

A facultative pond has two primary components: 1) an anaerobic (without oxygen) fermentation pit at the bottom where raw effluent and septage enter and bio-solids are trapped and reduced to ash; 2) an aerobic (oxygen-rich) upper layer which oxidizes biogases from the anaerobic processes below and eliminates noxious odors associated with wastewater treatment plants.

The earthen-walled fermentation pit is designed to allow a very long retention time, enabling anaerobic microbes to reduce the bio-solids to ash. The design prevents wind-blown mixing of the aerated upper waters into the anaerobic zone (which would inhibit the fermentation processes) and it also prevents rapid weather changes from causing an inversion of the pond's contents (which is a common cause of odor problems in typical aerated pond systems).

An unconventional feature of the facultative pond is the use of an oxygen rich upper layer to oxidize malodorous bio-gasses arising from the anaerobic processes in the fermentation pit below. This "scrubbing" effectively mitigates offensive odors associated with conventional wastewater plants. Standing next to the facultative pond one typically perceives only the smell of algae, much like that of a healthy lake.

Fermentation Pits

These pits are integral with and incorporated in the bottom of the Facultative Pond. The fermentation pits receive both the effluent collected from the collection system and the septage from septic tank

collection from the SSMMP. Through anaerobic fermentation and long retention, they reduce organic solids to ash, achieving a 99% reduction in volume on-site at the treatment plant, thus eliminating sludge processing and treatment as environmental and cost considerations. This processing produces methane gas, which can be harvested to produce energy for plant operation or electrical energy production.

The AIWPS™ treatment plant at St. Helena, California, has been operating for 31 years and has never accumulated a volume of sludge requiring removal.

Septage Processing

Septage collection is the responsibility of the SSMMP which will collect septage from all septic tanks maintained by the SSMMP and deliver it to the processing plant. The Community AIWPS™ system is slightly modified from the St. Helena facility in that septage and effluent are separated for treatment. Because of the concentrated nature of the collected septage, a separate septage processing facility will be linked to the AIWPS™ system. It may be necessary to remove accumulated sludge from this facility approximately every five years, depending upon demonstrated operation and efficiency of the facility.

High Rate Ponds

After initial processing in the Facultative Pond, the effluent is transferred into the High Rate Pond, a highly efficient "algae farm". ("High Rate" refers to the growth rate of algae in the pond, not the speed of effluent in the pond.) The High Rate Pond stimulates algal growth through photosynthesis, thus generating a very high level of dissolved oxygen content. This oxygen is immediately available to bacteria to oxidize most of the biochemical oxygen demand (BOD) remaining in the effluent from the Facultative Pond.

The High Rate Pond is channelized and usually less than one (1) meter deep. An energy-efficient paddle wheel slowly mixes and propels the effluent through the pond channels, producing a gentle rolling motion and insuring that the algae have maximum solar exposure and therefore maximize oxygen production.

Algal Settling Ponds

Next in the series of ponds are the Algal Settling Ponds. Multiple ponds are required, some in operation and some resting in order to periodically harvest the algae for re-use. The active ponds are kept quiescent, allowing 50-80% of the algae to settle out of the effluent during one or two days residence time. Settled algae hibernate, rather than decay, allowing decanting of the pond periodically and harvesting of algae without odors.

The harvested, dried algae is very rich in nitrogen, phosphorus, and potash and is an excellent fertilizer for fast-growing ornamental plants. It is sometimes mixed with grains, pelletized and sterilized, and then used as protein-rich animal feed, providing a reclaimed resource for animal production.

"The quality of the effluent with the algae removed should be: BOD less than 10 mg/liter, suspended solids less than 5 mg/liter, ammonium less than 5 mg/liter and nitrate less than 3 mg/liter. There should be no coliform bacteria, parasite eggs, or virus, although the latter remains to be proved, since there is no [scientifically-verified] virus data for the new AIWPS™. However, with added Dissolved Air Flotation (DAF), filtration and Ultra Violet (UV) disinfection, no coliform bacteria, parasite eggs, or virus would be present. Heavy metals and chlorinated hydrocarbons are expected to be within the State of California limits."[3] These expected conditions would be verified during final design of the system.

Final Treatment Facility

Waters emerging from the settling ponds are sufficiently low in biochemical oxygen demand (BOD) and suspended solids to percolate readily into the ground or to be used for irrigation. With Dissolved Air Flotation (DAF), filtration and Ultra Violet (UV) disinfection, the water could be used for irrigation of ornamental landscape. Several sites in the Community could utilize part of this water for irrigation without substantial infrastructure costs. These sites include the Community Park, four school sites, and the golf course. Providing this treated water either from the treatment site or from the harvesting well lines would reduce the current extraction from the potable water supply.

[3] Personal conversation with Dr. William Oswald, November 19, 1997.

Treatment ...

Once the water is free of suspended solids it can be pumped into underground recharge basins. This final disinfection will most likely be required by the regulatory agencies, to satisfy the Community, and to provide for the most options for recharge of the potable water supply.

Final Polishing of Treated Wastewater

If desired, constructed wetlands may be employed to further polish and refine the treated wastewater, to provide habitat for wildlife, and to provide community amenities and passive recreation.

Storage (retention)

Treated wastewater can be retained and utilized as recreational ponds or lakes as amenities for the Community and as reservoirs for storage for irrigation use.

For technical descriptions of AIWPS™ systems, please see the Appendix to this Plan Proposal.

Please see Conceptual Site Plans of the treatment area and town center located on the following pages.

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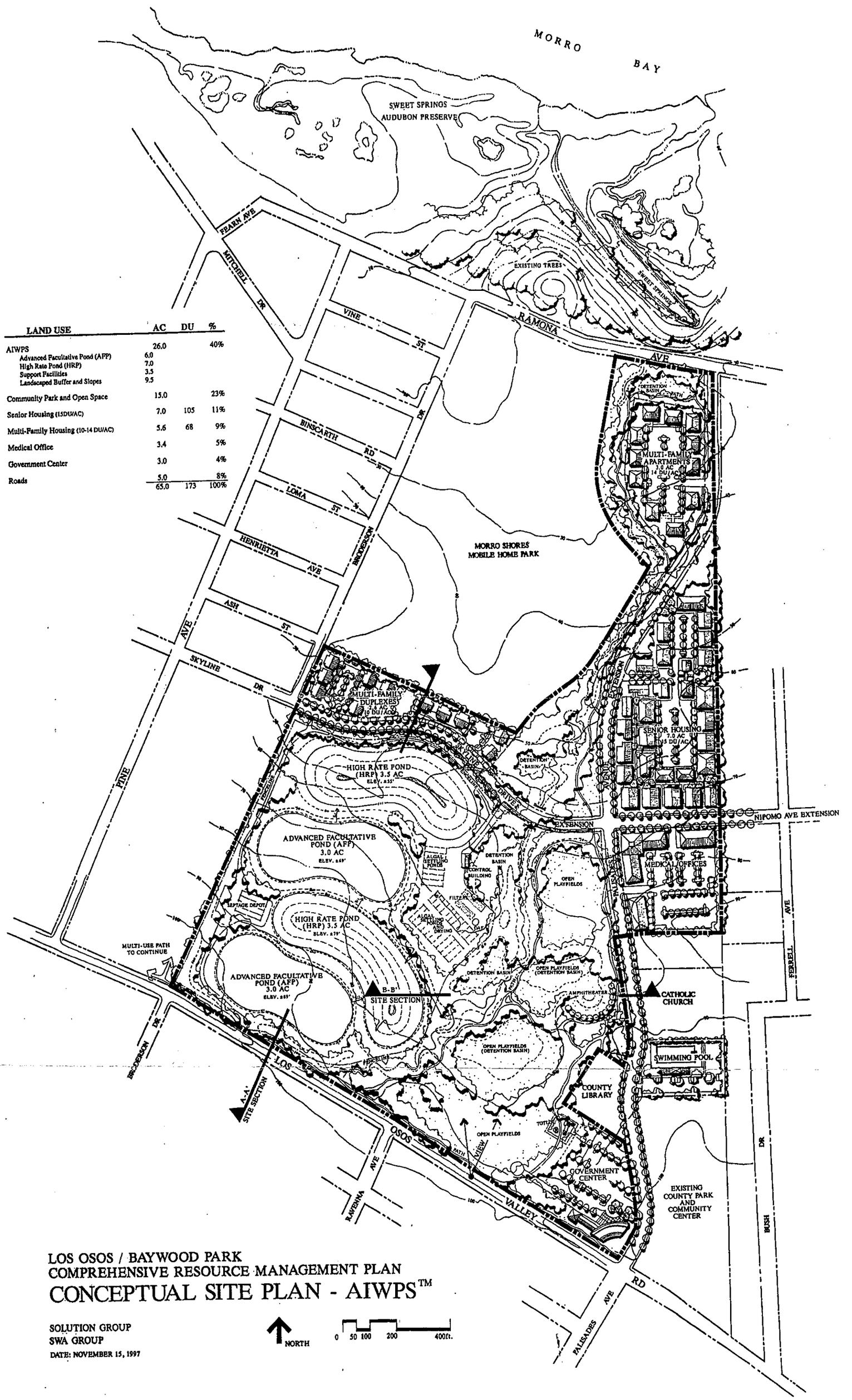
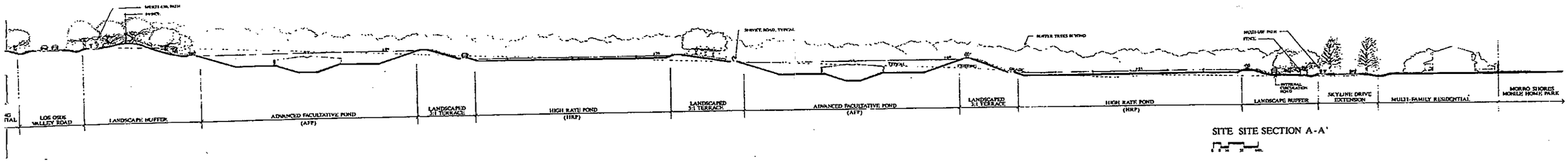


LAND USE	AC	DU	%
AIWPS	26.0		40%
Advanced Facultative Pond (AFP)	6.0		
High Rate Pond (HRP)	7.0		
Support Facilities	3.5		
Landscaped Buffer and Slopes	9.5		
Community Park and Open Space	15.0		23%
Senior Housing (15DU/AC)	7.0	105	11%
Multi-Family Housing (10-14 DU/AC)	5.6	68	9%
Medical Office	3.4		5%
Government Center	3.0		4%
Roads	5.0		8%
	65.0	173	100%

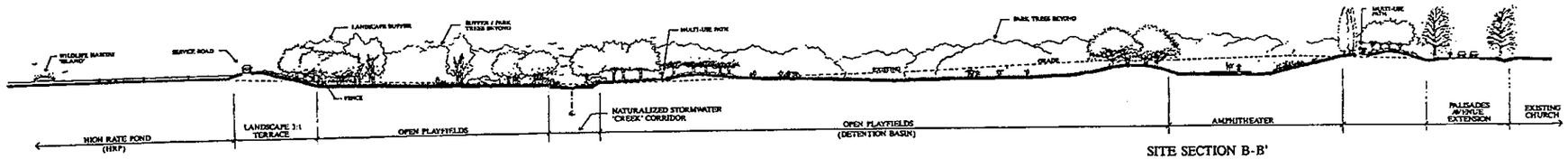
LOS OSOS / BAYWOOD PARK
COMPREHENSIVE RESOURCE MANAGEMENT PLAN

CONCEPTUAL SITE PLAN - AIWPS™

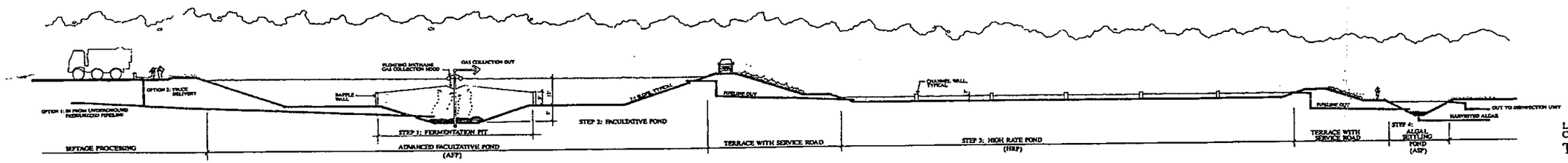
SOLUTION GROUP
SWA GROUP
DATE: NOVEMBER 15, 1997



SITE SITE SECTION A-A'



SITE SECTION B-B'



AIWPS PROCESS SECTION

LOS OSOS / BAYWOOD PARK
COMPREHENSIVE RESOURCE MANAGEMENT PLAN

TYPICAL SITE SECTIONS

SOLUTION GROUP
SWA GROUP

DATE: NOVEMBER 13, 1997

3) Establish a treated waste-water Recharge System which will effectively return this resource by recharge to the "Lower Aquifer" and to subsurface locations in the "Upper Aquifer", therefore permitting harvesting and return of water to the potable water supply of the Community. This will provide a sustainable water supply to the Community for full build-out potential without relying on water resources outside our community.

The geohydrology of this water basin is not thoroughly understood and the location and method of best recharge is being reviewed at this time. The current water basin geohydrology study[4] authorized by the three water purveyors to the community will hopefully provide additional information. In any case, it is imperative that sites be identified which can assure adequate recharge of aquifers and ensure water quality and quantity for full build-out of the community. Multiple sites may be desirable to reduce impact of water volumes throughout the Community and to ensure harvesting of water supplies for a sustainable period.

These issues can be resolved without delay to the project because there will be adequate time to perform these studies while the collection system and treatment plant are designed and constructed.

The benefits of accurately identifying these recharge areas are:

- provision of a potable water supply for full build-out of the Community;
- elimination of additional costs for construction, maintenance, and cost-of-supply from outside water suppliers (i.e. State Water). (These costs will likely be more expensive and unreliable in the future);
- no need to import water containing deleterious materials and heavy metals (i.e. mercury from Lake Nacimiento);
- elimination of potential moratorium on development in the Los Osos/Baywood Park community for lack of potable water supply;
- reduction of potential costs for mitigation of or loss of endangered species habitat.

[4] Woodward-Clyde, Consultant

Recharge ...

It should be noted that the wastewater treatment volume is substantially reduced in the Community Plan, to .82 Million gallons (approximately 3 acre-feet) per day, and that the volume for recharge is similarly reduced, reducing the impact on the recharge site(s).

The County-proposed design at the Broderson site creates problems, rather than adequate solutions, and is opposed by the Community because of:

- encroachment upon endangered species habitat;
- catastrophic failure potential of currently designed ponds;
- liquefaction potential down-slope;
- potential "daylighting" (surfacing) of ground water at locations in the community down-slope of release site;
- unresolved potential health hazards due to treatment level standards;
- unresolved reintroduction method for recharge;
- lack of recharge to the lower aquifer water supply.

Current information indicates that there are two best areas for introduction of recharge water:

1) The upper reaches of Los Osos Creek south of Los Osos Valley Road, which is thought to be the primary location for re-introduction of treated recharge water for access to the Lower Aquifer;

2) The general vicinity of the Broderson site for re-introduction of treated recharge water for access to the Upper Aquifer.

Until better geohydrologic updates are available, this Plan proposes multiple alternate sites for re-introduction of treated recharge water, utilizing the best combination of upper and lower aquifer recharge sites. Multiple sites reduce the potential point-source impact of recharge waters and spread them at wider locations in the Community. In order of preference, these are:

1) Irrigation for public spaces: Community Park; Los Osos Middle School and related play fields; Baywood Elementary School; Sunnyside Elementary School; Monarch Grove Elementary School and Sea Pines Golf Course. If additional park lands, public facilities, and linear parks are developed in the Community, these should be added.

2) Outlet to Los Osos Creek at the easterly end of Calle Cordoniz right-of-way. It is currently thought that the creek can accept approximately 330,000 gallons per day (1 acre-foot) or more, during the "dry" season. The pipeline for this recharge should be sized to carry 660,000 gallons per day (2 acre-feet) to provide such volume if the creek can accept more capacity, and provide an outlet for excessively heavy flows during storms or emergencies.

3) Multiple sites (including previously farmed and historically disturbed sites) on properties south of Highland Drive and west of Broderson, for Upper Aquifer recharge. These parcels should be acquired now for estimated full expansion, but developed on an as-needed basis as the Community expands to full build-out. They are as follows:

a) APN 074-022-014. 5-acre parcel.
b) APN 074-022-041. 5-acre parcel.
c) APN 074-022-030. 80-acre parcel (north 10 acres)

Recharge methods to be considered should include:

1) Gravity wells, provided they are proven feasible;
2) Shallow-depth percolation basins;
3) Large leach fields;
4) Infiltrator Chamber™ systems;
5) Other methods revealed during current studies.

The volume of treated wastewater will be substantially reduced under the Community Plan. The treated wastewater will be tertiary/disinfected and will not produce a health risk for any of these recharge points.

If percolation basins are selected as the recharge method, the Community Plan anticipates that a maximum of 10 acres of recharge basin development will adequately provide for the infiltration volume generated for the upper aquifer recharge facility. At an average depth of four feet, 40 acre-feet of basin capacity would be developed, providing 13 times the maximum daily output volume from the AIWPS™ treatment facility. These basins would be scaled in size for best fit in relation to the adjacent housing and the Community.

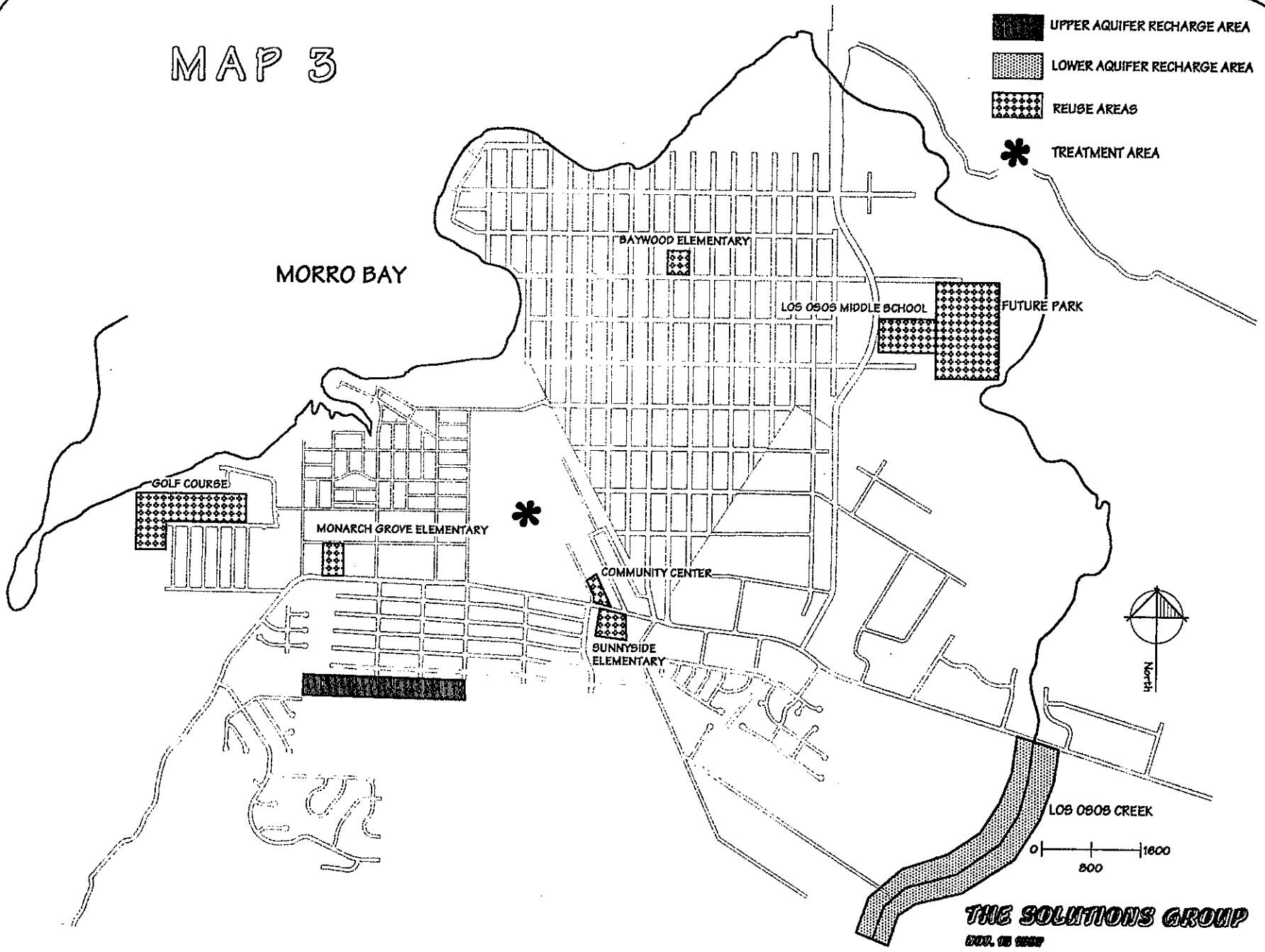
Recharge ...

Percolation rates are being tested. With basins of four feet in depth, it is anticipated that a basin would drain in less than 12 hours at a percolation rate of six inches per hour, which is the minimum rate common to the soil type at the recharge sites.[5] The basins would receive treated wastewater in rotation, some being filled while others are percolating or awaiting filling.

Most likely, these facilities will be located on the two five-acre parcels and the northerly 10 acres of the 80-acre parcel, substantially reducing the environmental impact on the 80-acre site and retaining the remaining 70 acres of that site with its present habitat.

Further geohydrogical studies should be made to determine if acceptable recharge sites could be located east of Los Osos Creek for direct recharge to the lower aquifer. If such sites are located, re-evaluation of recharge should be undertaken to further reduce or eliminate location of recharge at the sites specified above.

[5] Soil Survey of San Luis Obispo County, California. United States Department of Agriculture, Soil Conservation Service.



PROPOSED TREATMENT/RECHARGE/REUSE AREAS

4) Install harvesting well lines in effluent-collected low areas to retrieve the water resource and to control ground water levels.

Harvesting well lines will be installed in effluent-collected low areas where the STEP system is in place. The number and specific location of these wells would be designed to consider the management of the groundwater table in these low areas; to prevent potential salt water intrusion; and to harvest the maximum amount of water for reintroduction to the potable water supply of the Community.

These would include:

1) Installing a well line in street rights-of-way from the vicinity of South Bay Blvd. and Paso Robles Street to the vicinity of El Moro Avenue and 4th Street. Each well would be 100' deep, with 6" diameter casing and pumps sized to produce 100 gallons per minute. All wells would be built to State Well Standards for drinking water, with proper sanitary seal.

2) Installing a well line in street rights-of-way from the vicinity of Pine Street and Binscarth Road to the vicinity of Binscarth Road and Nancy Avenue, all built to the same specifications as in 1), above.

These harvesting wells will:

- provide additional water supply to the community;
- lower the ground water in the low areas of the community to provide capacity to accept and preserve subsurface underflow and prevent rising water, which has been blamed for flooding;
- reduce infiltration and inflow into gravity collection systems, if any; and
- provide a vastly increased and accurate monitoring of ground water quality, specifically applied to water supply.

It is unlikely, however, that this harvesting will completely relieve the surface flooding resulting from improper street and lot grading which was permitted by the County, and which remains a County responsibility.

Harvesting ...

Production from 18 wells at 100 gallons per minute would harvest up to approximately 2,200 acre-feet of water supply per year (at 75% efficiency) to potentially:

- increase potable water supply for community build-out;
- blend with water from other wells for dilution;
- provide for potential sale of harvested water to water purveyors; and
- offset community landscape irrigation and/or agricultural use.

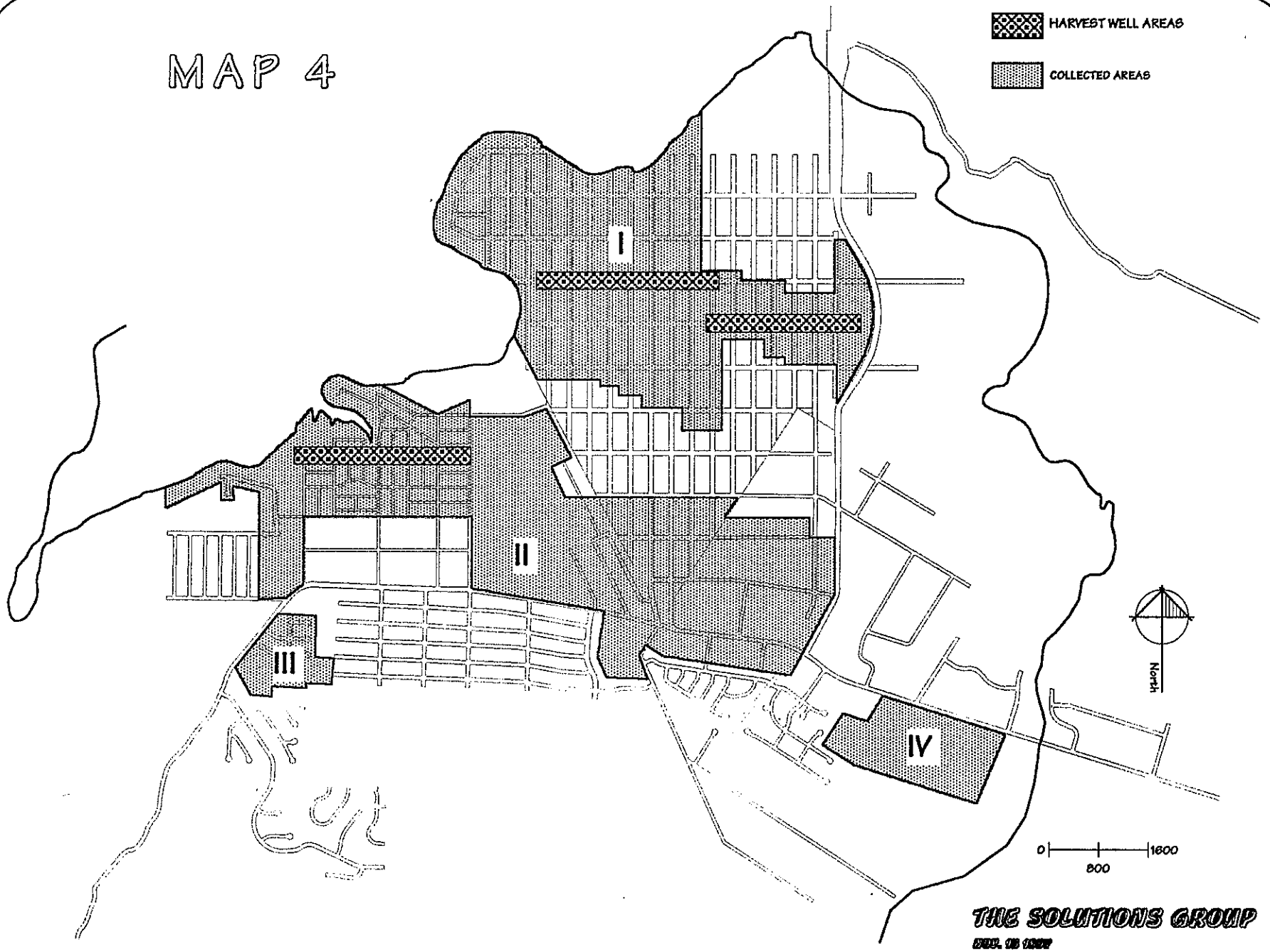
It should be noted that:

1) The demand on the water supply from 1992-1996 for an average population of 14,517 was 2,245 acre-feet per year.[6] It is conceivable that harvesting from the upper aquifer would substantially reduce consumption from the lower aquifer, providing additional water resource for anticipated buildout of the Community.

2) The anticipated collection, treatment, and recharge of the Community Plan is 1.0 Mg/d, the equivalent of three acre-feet per day, or about 1,100 acre-feet per year. The harvesting well line design must take into consideration: a) the geohydrological effect of release of the treated effluent; b) the locations of that release; c) the potential of harvesting relative to the release locations; and d) the management of the upper aquifer considering that release.

3) Disinfection and possible interface nitrogen removal should be anticipated to satisfy health agencies. This may be a temporary measure, and should be relatively inexpensive, but maintaining them for emergency use would be a worthwhile safety measure.

[6] p. 3-36 Estero Area Update Draft August 1997



PROPOSED HARVEST WELL AREAS

The County Proposal ...

(County of San Luis Obispo Engineering Department and its Consultant):

- does not include the entire Community;
- does not address full build-out of the Community;
- does not address community potable water supply as a primary concern;
- only addresses wastewater treatment (sewerage) as a one problem/one solution issue without considering other community or environmental factors, such as high ground water, water supply, and habitat preservation;
- is not affordable for 30% of our community residents;
- is excessive in collection area and treatment plant capacity;
- employs old, mechanically-based, energy-intensive technology;
- contracts engineering consultants familiar only with that technology;
- employs a treatment plant has a limited life expectancy of 15-20 years without substantial retrofitting;
- requires a treatment plant that is expensive to manage, maintain, repair, and replace;
- does not address costs or location of sludge disposal;
- does not provide tertiary level treatment with disinfection;
- does not address recharge of the Community lower-aquifer water supply;
- requires demolition or abandonment of existing septic tank/leaching infrastructure with estimated value of $14 million;
- does not include hook-up connection, septic tank decommissioning or lift pumps for collected sites;
- does not presently resolve environmental issues with endangered species habitat on sites selected for treatment or disposal;
- does not carry any guarantee to our community that it will resolve the perceived nitrate issue or protect our community from catastrophic failure of either the treatment plant or disposal system.

Comparisons ...

COUNTY PROPOSAL	COMMUNITY PROPOSAL
District Area	
Assessment District	Septic System Maintenance/ Management Program
Total Units Affected: 5300 (est.). Arbitrary boundaries.	Total Units Affected: All units within the Urban Reserve Line: 7350 (est.)
Phase I: 3710 units assessed (70%) Phase II: 1060 units assessed (20%)	
Total Units Assessed: 4770	Total Units Assessed: 7350
	Program responsible for septic system: • Inspection • Repair • Replacement • Pumping • Septage removal
Existing Septic Tanks/Leaching Systems	
Tanks are decommissioned at owner's expense in collection area.	Tanks remain in place in Collection Area (60% of SSMMP area) Tanks and leaching systems remain in place in balance of SSMMP area.
Loss of existing infrastructure and cost of decommission estimated at $3000 per unit: 4770 x $3000 = $14,310,000	Tanks and leaching systems installed prior to 1978 will be subject to inspection for acceptance to Program. Of those, substandard systems are to be repaired at Owner expense prior to acceptance to the SSMMP.

Comparisons ...

COUNTY PROPOSAL

COMMUNITY PROPOSAL

Collection System

(From EIR 11/96)

Service Area conforms to RWQCB Prohibition Boundary, 3 Phases:

Phase 1: Areas < 30' to ground water
Phase 2: Areas > 30' to ground water, deferred for 2 years
Phase 3: Large lots; deferred (unspecified)

Service Area includes areas with:

< 30' vertical separation from surface to ground water + commercial areas + mobile home parks + potential future subdivision areas required to be collected for full build-out of the Community.

Collection Area:

Gravity flow sewer pipe:	50 miles
Low pressure sewer pipe:	23,000 lf
Sewer force main:	17-20,000 lf
Pump stations:	2
Lift stations	6

Collection Area:

Gravity flow sewer pipe:	None
Low pressure sewer pipe:	32 miles
Sewer force main:	7,200 lf
Pump stations:	None
Lift stations	None
Division Valves	284
Cleanouts	178

Collects all sewage

Collects only effluent from existing septic tanks utilizing Septic Tank Effluent Pumping (STEP) technology; receives septage from septic tanks.

Stage 1 collection:
Ave. dry weather flow (ADWF): 1.32 Mg/d
Peak wet weather flow (PWWF): 4.18 Mg/d
to serve population of 18,060.

Stage 2 collection:
Ave. dry weather flow (ADWF): 2.03 Mg/d
Peak wet weather flow (PWWF): 5.23 Mg/d
to serve buildout population of 23,125

Complete flow for full build-out of Community is estimated at .82 M/gpd. AIWPS™ plant is sized for 1.0 M/gpd.

Because the STEP is a sealed, pressurized system, outside I/I (infiltration and inflow) is not a problem in wet weather and no I/I is anticipated. Consequently, peak wet weather flow (PWWF) is not a problem with the STEP system which reduces the treatment and recharge M/gpd.

Comparisons ...

COUNTY PROPOSAL	COMMUNITY PROPOSAL
Treatment System	
System:	**System:**
Modified Ludzig Ettinger Process (MLE)	Advanced Integrated Wastewater Pond System™ (AIWPS™)
Capacity:	**Capacity:**
Stage 1 collection: Ave. dry weather flow (ADWF): 1.32 Mg/d Peak wet weather flow (PWWF): 4.18 Mg/d to serve population of 18,060.	Estimated at .82 Mg/d, but sized for 1 Mg/d for full build-out of community with population of 22,500 in year 2019..
Stage 2: Ave. dry weather flow (ADWF): 2.03 Mg/d Peak wet weather flow (PWWF): 5.23 Mg/d to serve build-out population of 23,125	
System:	**System:**
Predominantly mechanical system	Predominantly natural system
Life expectancy without retrofit: 15-20 years	Life expectancy without retrofit: Excess of 40 years
Maintenance/Operation costs: High	Maintenance/Operation costs: Low
Energy consumption to operate: High	Energy consumption to operate: Low
Construction cost: High	Construction cost: Low
Land area required: Low (13 acres)	Land area required: High (26 acres), but with numerous ecological benefits
Sludge removal/disposal costs: High, not included in estimates	Sludge removal/disposal costs: Virtually none

Comparisons ...

COUNTY PROPOSAL	COMMUNITY PROPOSAL
Potential for failure:	**Potential for failure:**
Historically, mechanical systems breakdown and fail on a regular basis	Historically, exceptionally low
Final Product:	**Final Product:**
Produces secondary level treatment without disinfection, which restricts re-use and recharge options	Produces tertiary level treatment with disinfection, which permits maximum re-use and recharge options

Recharge Systems

Note: The most effective method and the location of sites for reintroduction of treated wastewater to recharge the lower aquifer are unknown at this time. Scientific exploration of this issue is unclear and not adequately tested for either system to assure recharge of the lower or upper aquifers.

Reintroduces secondary level treated wastewater to either percolation ponds or gravity wells located on the Broderson recharge site.	Recommends re-introduction of tertiary level, disinfected effluent in the best-estimated areas for recharge of the lower and upper aquifers:
Assumed:	**Assumed:**
Stage 1 collection: Ave. dry weather flow (ADWF): 1.32 Mg/d Peak wet weather flow (PWWF): 4.18 Mg/d	1.0 Mg/day capacity
Stage 2: Ave. dry weather flow (ADWF): 2.03 Mg/d Peak wet weather flow (PWWF): 5.23 Mg/d	Locations in order of preference: 1) Public parks, schools, golf course; 2) Los Osos Creek (in dry period), .3 to .5 Mg/day; 3) a) APN 074-022-014. Five-acre parcel; b) APN 074-022-041. Five-acre parcel. c) APN 074-022-030 (northerly 10 acres);
All concentrated at Broderson recharge site.	

Comparisons ...

Note: The Community Plan is based upon a maximum of 1 Mg/day received at the treatment site for full build-out of the community, estimated at 22,500 population. It favors multiple discharge sites, more widely dispersed over the currently favored, most viable areas, which have the maximum capacity to permit recovery of the water resource with least potential damage, either physically or aesthetically, to the Community.

Because of endangered specie habitat issues, probably only the northerly 10 acres of parcel 074-022-030 (80-acre site) will be utilized for recharge basins, retaining 70 acres of that site for sensitive habitat preservation.

Exemptions ...

Relief from the RWQCB 83-13 Mandates

GUIDELINES FOR GRANTING EXEMPTIONS TO THE LOS OSOS/BAYWOOD PARK DISCHARGE PROHIBITION #83-13 REGIONAL WATER QUALITY CONTROL BOARD

A. After completion and approval of 100% design plans for collection system, treatment system, disposal system, and reclamation system (due _____) and formation of a Septic System Maintenance/ Management Program (SSMMP) is completed, permits shall be issued for projects which meet the following criteria:

1) New construction, expansions and remodels of commercial property (no area restriction);
2) New residential construction and remodels of existing residential structures in non-collected areas;

<u>if the project meets the following criteria</u>:

- Project includes SSMMP-approved septic system;
- Project is located in area with greater than 30 feet separation between ground water and the bottom of the leaching system;
- Property owner grants to SSMMP right of entry necessary to access, inspect, monitor, and maintain on-site treatment tank and disposal system.

B. When collection system and treatment system are operational in collection regions:

1) New residential construction, expansions and remodels shall be allowed in collected areas:

<u>if the project meets the following criteria</u>:

- Project includes SSMMP-approved septic tank;
- New construction, expansions, and remodels shall be required to connect to the operational community wastewater collection system prior to occupancy of those units, if applicable for wastewater collection;

Exemptions ...

- Property owner grants to SSMMP right of entry necessary to access, inspect, monitor and maintain on-site treatment tank and disposal system.

COST PER UNIT ...

Unit Type	# of Units	% of DUE	Monthly Cost per DUE	Monthly DUE Cost per Unit		Monthly SSMMP Cost per Unit		**Total Monthly Cost per Unit**	Monthly DUE Revenue	Monthly SSMMP Revenue
Single Family Unit, collected	2365	100.00%	$33.00	$33.00	+	$5.75	=	**$38.75**	$78,045	$13,599
Single Family Unit, not collected	2449	50.00%	$33.00	$16.50	+	$5.75	=	**$22.25**	$40,409	$14,082
Single Family Unit, commercial water	364	25.00%	$33.00	$8.25	+	$5.75	=	**$14.00**	$3,003	$2,093
Single Family Unit, private well	143	12.50%	$33.00	$4.13	+	$5.75	=	**$9.88**	$590	$822
Multi-family Unit, collected	1118	75.00%	$33.00	$24.75	+	$5.75	=	**$30.50**	$27,671	$6,429
Multi-family Unit, not collected	23	37.50%	$33.00	$12.38	+	$5.75	=	**$18.13**	$285	$132
Mobile Home Unit	490	50.00%	$33.00	$16.50	+	$5.75	=	**$22.25**	$8,085	$2,818
Commercial Unit	404	100.00%	$33.00	$33.00	+	$5.75	=	**$38.75**	$13,332	$2,323
Totals:	**7356**								**$171,419**	**$42,297**

Notes:

The monthly DUE cost per unit is based on securing a $31,500,000 loan from the State Revolving Fund at 2.8% interest, 20 year amortization. Monthly cost to service this loan would be $171,162.

The monthly SSMMP cost per unit is based on an estimated annual operating cost of approximately $500,000.

COSTS ... COMPARATIVE

ITEM	COUNTY PLAN COST	COUNTY PLAN SUBTOTAL	COMMUNITY PLAN COST	COMMUNITY PLAN SUBTOTAL
LAND ACQUISITION				
Estimated Market Value			$6,450,000	
Broker Fees Appurtenant to Land			$387,000	
Closing Costs			$129,000	
SUBTOTAL, LAND ACQUISITION		**$3,767,500**		**$6,966,000**
CONSTRUCTION				
COLLECTION SYSTEM			$3,063,700	
TREATMENT SYSTEM			$4,310,216	
DISTRIBUTION & RECHARGE SYSTEM			$1,494,800	
HARVESTING SYSTEM			$308,000	
SUBTOTAL	$36,768,000		$9,176,716	
Contingency	$3,676,800		$917,672	
SUBTOTAL	$40,444,800		$10,094,388	
Engineering & Administration	$4,015,200		$1,514,158	
SUBTOTAL CONSTRUCTION		**$44,460,000**		**$11,608,546**
TOTAL WITHOUT-CONNECTION COSTS		**$48,227,500**		**$18,574,546**
STEP SYSTEM CONNECTION COSTS				
Connection Construction			$10,004,440	
10% Contingency	*NOT INCLUDED*		$1,000,444	
SUBTOTAL	*IN COUNTY PLAN*		$11,004,884	
15% Engineering & Administration			$1,650,733	
SUBTOTAL CONNECTION				**$12,655,617**
TOTAL WITH-CONNECTION COSTS		**$48,227,500**		**$31,230,162**

	COUNTY PLAN	COMMUNITY PLAN
ADDITIONAL COMMUNITY PLAN COSTS/RETURNS		
Community Center Parcel		
Site Planning, Design, CC&R's, Tentative Plans		$400,000
Return from Sale of Development Parcels		($6,556,000)
SUBTOTAL ADDITIONAL COMMUNITY PLAN COSTS/RETURNS		**($6,156,000)**
TOTAL WITH ADDITIONS	**$48,227,500**	**$25,074,162**

Notes:
The cost comparison above is based upon land acquisition and construction of facilities. The Community Plan costs do not include the following line items which are shown in the County Plan costs:

General Project Costs (to 6/30/97)	$7,833,944
Assessment District Costs	$1,443,000
Permits Acquisition	$200,000
Financing Costs	$6,188,000
Pump Discount	$1,000,000
Construction Management	$4,015,200
Environmental Monitoring	$3,176,000

The Community Plan costs do include the following item which is not included in the County Plan costs:

STEP System Connection Costs	$12,655,617

Note, however, that the Community Plan is estimated to cost $30,000,000 less than the County Plan for comparable land acquisition and construction portions. Additional project costs must be evaluated based on this reduction and other cost-saving aspects of the Community Plan.

OVERHEAD COSTS

	COUNTY	COMMUNITY
General Project Costs (to 6/30/97)	**$7,833,944**	

These costs are subject to evaluation and negotiation with the County prior to being included in Community Plan costs.

Project Overhead Costs:

Comparable Land/Construction Costs:	**$48,227,500**	**$18,574,546**

Based on the reduction in total land/construction costs, the following prorata overhead costs might be applicable to the Community Plan. However, these cost allocations must be made after an objective evaluation of these costs and other cost-saving aspects of the Community Plan.

Assessment District Costs	$1,443,000	$555,763
Permits Acquisition	$200,000	$77,029
Financing Costs	$6,188,000	$2,383,273
Pump Discount	$1,000,000	$385,144
Construction Management	$4,015,200	$1,546,431
Environmental Monitoring	$3,176,000	$1,223,218
	$16,022,200	**$6,170,859**

LOS OSOS/BAYWOOD PARK ASSESSMENT DISTRICT
REVISED FUNDING NEEDS ESTIMATE SUMMARY
Source: Engineer's Report, Revised June, 1997

ITEM	DESCRIPTION	ITEM COST	TOTALS	Percent of Total:
	PRE-CONSTRUCTION COSTS			
A.	**General Project Costs (through 6/30/97)**		$7,833,944	11.51%
B.	**Assessment District Costs**			
1	Refunds and Interest	$150,000		
2	Contingencies and Changes	$1,193,000		
3	Administration and Staff Support	$100,000		
	Subtotal Assessment District Costs		$1,443,000	2.12%
C.	**Permits Acquisition**		$200,000	0.29%
D.	**Financing Costs**			
1	Bond Counsel	$175,000		
2	Underwriter's Discount	$442,000		
3	Issuance	$155,000		
4	Reserve Fund	$4,372,000		
5	Paying Agent	$30,000		
6	Administration	$30,000		
7	Insurance	$984,000		
	Subtotal Financing Costs		$6,188,000	9.09%
E.	**Property Acquisition & Rights of Way**			
1	Property	$3,455,000		
2	Administration	$67,500		
3	Special Studies/Design Revisions	$245,000		
	Subtotal Property Acquisition & Rights of Way		$3,767,500	5.53%
F.	**Pump Discount**		$1,000,000	1.47%
	TOTAL PRECONSTRUCTION COSTS		**$20,432,444**	**30.02%**
	CONSTRUCTION COSTS			
G.	**Construction Costs**			
1	Segment I & II - Collection, Treatment & Disposal	$36,768,000		
2	Contingencies 10%	$3,676,800		
3	Construction Management	$4,015,200		10.92%
4	Environmental Monitoring	$3,176,000		8.64%
	TOTAL CONSTRUCTION COSTS		**$47,636,000**	**69.98%**
	TOTAL ESTIMATED PROJECT COSTS		**$68,068,444**	**100.00%**

LAND ACQUISITION

Treatment Area and Ancillary Development

Description	Area (acres)	APN	Estimated Fair Market Value
Tract No. 1643		074-229-21	
Lots 1-91	20.5		
Lots 97-99	3.4		
Lot 100	5.1		
Lot 101	14.8		
Lot 102	9.4		
Total	**53.2**		$4,500,000
Williams Pcl	11	074-229-17	$700,000

Recharge Areas

Broderson Recharge Site	80	074-022-030	$750,000
5-acre pcl.	5	074-022-014	$250,000
5-acre pcl.	5	074-022-041	$250,000
Subtotal Land Acquisition, Market Value:			**$6,450,000**
Broker Fees appurtenant to Land	6%		$387,000
Closing Costs @	2%		$129,000
TOTAL, LAND ACQUISITION:			**$6,966,000**

COLLECTION SYSTEM
(Michael Parker, October 31, 1997)

Collection Regions I through IV:

ITEM	ESTIMATED QUANTITY	UNIT COST	SUBTOTAL
STEP			
Pressure Sewers			
2-inch diameter	20,025 lf	$12.00 /lf	$240,300
3-inch diameter	68850 lf	$13.50 /lf	$929,475
4-inch diameter	64275 lf	$15.00 /lf	$964,125
6-inch diameter	6900 lf	$17.00 /lf	$117,300
8-inch diameter	9525 lf	$20.00 /lf	$190,500
Division Valves	284 ea.	$1,250.00 ea.	$355,000
Cleanouts	178 ea.	$1,500.00 ea.	$267,000
SUBTOTAL			**$3,063,700**
10% Contingency			$306,370
SUBTOTAL			$3,370,070
15% Engineering & Administration			$505,511
TOTAL, COLLECTION SYSTEM			**$3,875,581**

Note:
lf = linear foot
ea = each

TREATMENT SYSTEM

ITEM	ESTIMATED QUANTITY	UNIT COST	SUBTOTAL
Advanced Integrated Wastewater Pond System™			
Treatment System	1,000,000 ga	$3.50 /ga	$3,500,000
Basic Landscaping	405,108 sf	$2.00 /sf	$810,216
SUBTOTAL			$4,310,216
10% Contingency			$431,022
SUBTOTAL			$4,741,238
15% Engineering & Administration			$711,186
TOTAL, TREATMENT SYSTEM			**$5,452,423**

Note:
ga = gallon
sf = square foot

DISTRIBUTION & RECHARGE SYSTEM

ITEM	ESTIMATED QUANTITY	UNIT COST	SUBTOTAL
Irrigation Distribution:			
Treatment Site to LO Middle School & Baywood Elementary			
4-inch diameter	9,000 lf	$15.00 /lf	$135,000
Treatment Site to Monarch Grove Elementary and Golf Course			
4-inch diameter	5,500 lf	$15.00 /lf	$82,500
Treatment Site to Community Park & Sunnyside Elementary			
4-inch diameter	1,600 lf	$15.00 /lf	$24,000
Treatment Site to Los Osos Creek Recharge			
Distribution pipe			
8-inch diameter	8,000 lf	$20.00 /lf	$160,000
Energy dissipator	1 ea	$40,000.00 ea	$40,000
40-hp pump	1 ea	$8,400.00 ea	$8,400
Treatment Site to Broderson Site Vicinity			
Distribution pipe			
6-inch diameter	2,000 lf	$17.00 /lf	$34,000
25-hp pump	1 ea	$7,500.00 ea	$7,500
Construction: Recharge Basins, Broderson Site Vicinity			
4-ft ave depth	10 ac	$35,000.00 /ac	$350,000
Basic Landscaping (20 ac)	871,200 sf	$0.75 /sf	$653,400
SUBTOTAL			**$1,494,800**
10% Contingency			$149,480
SUBTOTAL			$1,644,280
15% Engineering & Administration			$246,642
TOTAL, DISTRIBUTION & RECHARGE			**$1,890,922**

Note:
lf = linear foot
ea = each
ac = acre

HARVESTING SYSTEM

ITEM	ESTIMATED QUANTITY	UNIT COST	SUBTOTAL
PER WELL:			
Drilling (6-inch casing)	100 lf	$21.00 /lf	$2,100
Pump (100 gpm)	1 ea	$4,800.00 ea	$4,800
Main (6-inch)	500 lf	$17.00 /lf	$8,500
Cost Per Well:			**$15,400**
Region I Well Line	12 ea	$15,400.00 ea	$184,800
Region II Well Line	6 ea	$15,400.00 ea	$92,400
SUBTOTAL			**$308,000**
10% Contingency			$30,800
SUBTOTAL			$338,800
15% Engineering & Administration			$50,820
TOTAL, HARVESTING WELL LINES			**$389,620**

Note:
lf = linear foot
ea = each

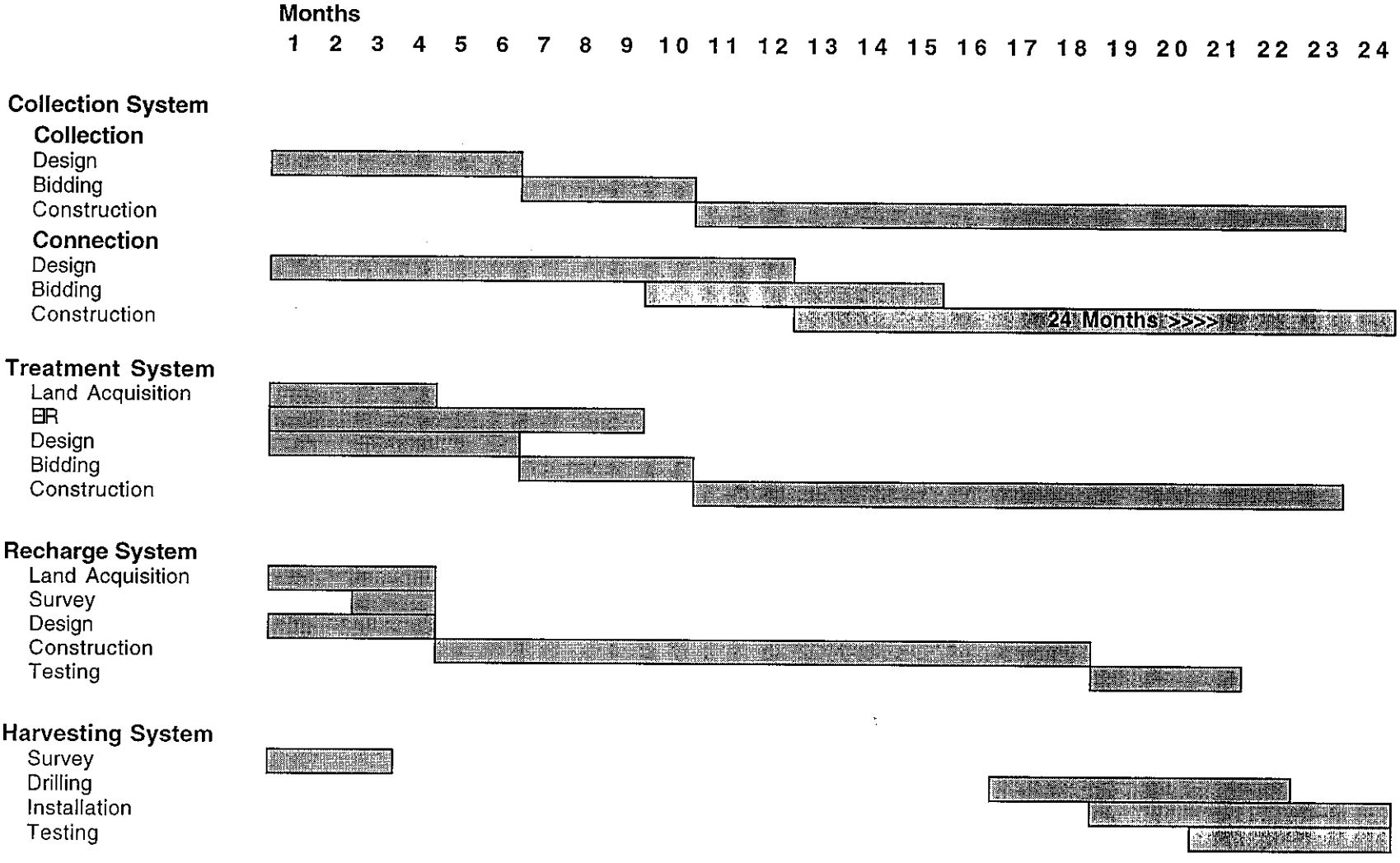
STEP SYSTEM CONNECTION COSTS
(Michael Parker, October 31, 1997)

ITEM	ESTIMATED QUANTITY	UNIT COST	SUBTOTOTAL
Pressure Sewer Pump Facilities			
Single Family STEP Units	1921 ea.	$3,500.00 ea.	$6,723,500
Commercial STEP Units	245 ea.	$5,000.00 ea.	$1,225,000
Large STEP Units	10 ea.	$10,000.00 ea.	$100,000
Multi-family STEP units	1118 ea.	$1,500.00 ea.	$1,677,000
Main (12-in. diam.)	7200 lf	$35.00 /lf	$252,000
AV/AR Assembly	2 ea.	$3,500.00 ea.	$7,000
ARVs	4 ea.	$3,500.00 ea.	$14,000
Blowoffs	3 ea.	$1,980.00 ea.	$5,940
SUBTOTAL			**$10,004,440**
10% Contingency			$1,000,444
SUBTOTAL			$11,004,884
15% Engineering & Administration			$1,650,733
TOTAL, STEP SYSTEM CONNECTION COSTS			**$12,655,617**

Note:
lf = linear foot
ea = each

COMMUNITY CENTER PARCELS DEVELOPMENT COSTS/RETURNS

Costs				Subtotal	Total
Site Planning, Design, EIR, CC&R's, PD plans				$400,000	
DEVELOPMENT COSTS					**$400,000**
Return from Sale of Developed Parcels:					
	Quantity	**Unit**	**Unit Cost**		
Multi-family Housing Units	68	units	$32,000 /unit	$2,176,000	
Senior Housing Units	105	units	$32,000 /unit	$3,360,000	
Medical/Office	3.4	acres	$300,000 /acre	$1,020,000	
RETURN FROM SALE OF DEVELOPED PARCELS					**($6,556,000)**
NET RETURN, COMMUNITY CENTER PARCELS					**($6,156,000)**



Note that this timeline addresses design and construction of the elements of the Plan and does not include agency review time, which is unknown.

Conclusion ...

This Community Plan proposal was formulated by knowledgeable, qualified scientists, engineers, designers, and interested parties from within the Community of Los Osos/Baywood Park, all working together to create a proposal which will be economically viable and environmentally sustainable as we build to our maximum population.

The Community Plan is a pragmatic, economically feasible, viable, multi-solution plan to solve multiple problems within our community. The Plan is not a delaying tactic; it is not a limited- or no-growth tactic; it is not an environmentally-driven, no-growth solution.

It is simply an attempt from our best community-oriented thinkers, with diverse backgrounds and interests to arrive at a pragmatic solution which solves multiple problems, at less cost to our community. The Community Plan allows our community to build to its maximum sustainable capacity with the least economic impact on our present residents. We will also to be able to preserve our community mix, solving the perceived problems in an economical way that allows our community to remain intact.

We will sustain and recharge our water resource without drawing on the resources of State Water or Nacimiento Water, and without paying the cost for these unreliable resources. We do not need to rely on these outside resources to sustain our community for full build-out of all entitlements now appurtenant.

This Community Plan is a reasonable plan, supportable by the Community. However, the Community of Los Osos/Baywood Park is in an unincorporated area of San Luis Obispo County and decisions affecting our community are made by County government. We have no local entity with authority to make decisions for our community.

The Solution Group, and our community, does not have the monetary resources of the County in retaining either reputable system designers or attorneys to represent our interests, as opposed to the County's interests or those of the mandates of the Regional Water Quality Control Board (RWQCB). All resources put into this Plan have been voluntary, or paid for personally by the individual members of the Solution Group. The County has not assisted in this effort to arrive at a reasonable, pragmatic solution for our community.

Conclusion ...

Our plea for your consideration is simply this:

The County's consultants:

- have limited experience in alternative systems;
- have a vested interest in an expensive system, which they recommend, and are now designing.

The County Board of Supervisors:

- has for over 20 years neglected its duty to this Community to resolve its infrastructure problems, even when federal and state programs existed to offset direct costs to this Community;

- currently finds the County in a highly political confrontation with the Regional Water Quality Control Board (RWQCB);

- perceives the County is under pressure to perform by the RWQCB, at any cost to the constituents of this Community;

- is understandably tired of this confrontation and wishes it would go away, as does the Community.

The Community of Los Osos/Baywood Park:

- does not believe that the County, through County Engineering and its consultants, has provided a reasonable solution to the issues confronting this community, nor has found a solution that is financially, physically, or socially equitable to this community;

- is exasperated that whenever a state or federal agency is inclined to look into this issue because of public pressure, the source of information is limited to the County and its representatives;

- is faced with the imposition of a $71,500,000 conventional sewer, with its residents expected to pay the entire assessment without federal or state off-set funding. (There is presently available a low-interest-rate (2.8%), $47,000,000 State Revolving Fund loan.)

Conclusion ...

This community is not alone - others, in this county and across the nation, will be faced with a similar situation under RWQCB mandates.

- is agreed that the costs of this infrastructure will forever change the social and business makeup of our community. The County's own calculations demonstrate that 28-32% of our residents cannot afford this $71,500,000 burden. Our local businesses will be faced with a population having a reduced discretionary income of, conservatively, $6 Million/year from our residents. Ours is primarily a residential community without substantial commercial job base. Many of these businesses are likely to be forced to close because of the burden of the infrastructure solution designed by the County. Our community is already experiencing the result of these financial impacts.

- has suffered under a building moratorium since January, 1988 -- nearly 10 years -- because of this issue and is anxious to have this burden removed so that the Community can move into the future.

What does the Community need?

We must have an integrated solution to our water and wastewater management problems. It must be a solution which is efficient, safe, and financially feasible for the entire Community of Los Osos/Baywood Park. The Community Plan meets those objectives. Since we must live with and pay for the solution, please allow us to build <u>this</u> Plan.