# LOCAC

## Los Osos Community Advisory Council

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2008 – 2009

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January 30, 2009

Mark Hutchinson
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Re: LOCAC Comments on LOWWP DEIR

Dear Mark:

Members of the Los Osos Community Advisory Council (LOCAC) and the people of Los Osos who have participated in the LOCAC review of the draft environmental impact report (DEIR) for the Los Osos Wastewater Project (LOWWP) thank you for the opportunity to comment on the sufficiency of this document as we and the County prepare to select the best and affordable wastewater project for Los Osos.

Even though LOCAC had not formally reviewed the previous wastewater projects because they were not officially county land use projects, the members of LOCAC back in 1995 felt so strongly about the sustainability of the Los Osos water basin that they devoted a complete section of the 1995 LOCAC vision statement to the holistic management of water including (but not limited to):

- ***waste water treatment facility(s) based on a natural biological process rather than mechanical system approach to the highest extent possible,***
- ***graywater reclamation, management and recycling, and***
- ***development of a water supply for agricultural or irrigation purposes***.

Now that the LOWWP is a county project, and since LOCAC is the forum for public review of all discretionary and county land use projects, it is appropriate that LOCAC be involved in the review process at each step. We heard from the County many times during the technical review process that to wait for the EIR before coming to conclusions about which technology and project would be best for Los Osos. The people of Los Osos were promised that the EIR document would provide the answers to the recurring questions of how the various alternatives would meet the objectives of the project. Therefore, LOCAC undertook the formation of an ad hoc committee to review the draft LOWWP EIR and assist the public in reviewing and responding to this document. In formulating our questions and voicing our concerns, we felt it was important keep in mind the 1995 LOCAC vision and the realities of the events of the last 13 years, including the failed sewer project in 2005 and the declaration of a Water Severity Level III condition in Los Osos that resulted from serious seawater intrusion in the lower aquifer,

The LOCAC DEIR committee included members of LOCAC and the public. They met at least one evening each week, even through the busy holiday periods, to review and discuss the DEIR. This was a tremendously difficult and laborious task for this study group, since most of the participants have had little or no experience in formally reviewing and submitting comments on a DEIR. Fortunately, a few committee members who have credentials in soil science, engineering, water resources, air quality, traffic assessment, or experience in reviewing environmental documents were able to provide general guidance and assistance with the formulation of the detail comments included in this packet. I would personally like to thank all the people who have contributed to the summary and section comments that follow. LOCAC reviewed and approved

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the submission of these comments and questions on the LOWWP DEIR at a special meeting held on January 27, 2007.

LOCAC and the people of Los Osos sincerely request that you and other county officials and interested parties thoroughly review and seriously consider the comments and concerns of LOCAC on this LOWWP DEIR. We understand that this committee's questions by no means exhaust all the concerns of the public, and we have encouraged many people to submit their specific comments to you separately. In response to our report, our expectation for this document is that you will:

- clarify areas where the explanation of a topic is unclear, incomplete, or missing the references to other sections or appendices when these offer better documentation of the issue;
- specify assumptions used for the alternatives and recommendations when they are not stated;
- provide answers to our specific questions; and
- perform additional analysis or provide reference to existing analysis of areas where the content presented in the section does not explain the County's decisions.

We look forward to a complete review of and electronic response to the issues raised in the summary and detailed discussion on DEIR sections and appendices that follow.

I believe that everyone in the community of Los Osos would like to see a successful, affordable, and sustainable wastewater system here. We look forward to the community survey that will be coming soon. Hopefully, we'll understand the alternatives more fully and can express our preferences more intelligently after receiving your answers and response to our comments on the DEIR. Thank you.

Sincerely,

Carole Maurer, LOCAC Chairperson

CC via e-mail:
SLO County Supervisors: Mecham, Gibson, Hill, Achajdian, Patterson (via Susan Baker)
U.S. Representative Lois Capps
State Assemblyman Sam Blakeslee
State Senator Abel Maldonado
SLO County Staff: Paavo Ogren, John Waddell
SWQCB, Board of Directors and Staff
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# Comments on the Draft EIR for the Los Osos Wastewater Project

Submitted by

## Los Osos Community Advisory Council
**(LOCAC)**

January 30, 2009

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## SUMMARY OF KEY CONCERNS ON THE DRAFT EIR OF THE LOWWP

In accord with the goals and values previously endorsed by the County in the Fine Screen Report and by the Technical Advisory Committee, the Los Osos Community Advisory Council (LOCAC) affirms the core values of Sustainability and Affordability for the Los Osos Wastewater Project (LOWWP).

The sustainability of a project is based on the tri-metric foundations of Environmental, Economic, and Social sustainability, where a wastewater project would first do no harm, and would ensure that future generations are protected from the negative impacts of our choices today. Therefore, we believe that **water and wastewater solutions are inextricably related, and that the *primary* goal of the LOWWP should be to restore and protect the Los Osos groundwater basin** and other environmental resources as a whole.

This priority is affirmed and mandated by State legislation (Porter-Cologne Act), which says, *"The State must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the state from degradation."* Seawater intrusion poses a much greater threat to basin degradation than nitrate pollution. Furthermore, according to AB2701, the County has authority and responsibility to approach water and wastewater from a basin-wide perspective and to address basin balance. The way that treated effluent from the LOWWP is used will impact the balance of the basin – one way or the other – as well as water quality. **If the project's reuse and/or disposal of treated effluent *does not contribute* to balancing the basin, then the project *exacerbates* the problem of seawater intrusion (SWI), which poses an even greater risk to the basin.**

The National Water Research Institute panel endorsed the following goals in their reviews of both the Update of 2006 and the DEIR technical memoranda in 2008, as stated by the Appropriate Technologies in the Key Environmental Impacts Statement* for a sustainable project, stating that the LOWWP shall:

1) *Provide greatest protection against overflows and other releases of partially or untreated wastewater from the system, which could pollute Morro Bay and other sensitive coastal ecosystems.*
2) *Provide the greatest possible protection to groundwater of the Los Osos Basin.*
3) *Avoid environmental impacts relating to construction and installation to the greatest extent possible, including impacts of open trenching (e.g. dewatering, soil stabilization, street reconstruction).*
4) *Avoid impacts to Native American Chumash sites.*
5) *Provide the most energy-efficient solution and enable the use of clean, renewable energy sources, avoiding environmental impacts (i.e., greenhouse gas emissions).*

*KEI Statement was produced by the Appropriate Technologies Coalition, including SLO Green Build, Sierra Club, Surfrider, and endorsed by Terra Foundation, Los Osos Sustainability Group, and Northern Chumash Tribal Council.

LOCAC's key concerns with the DEIR and the proposed LOWWP are briefly summarized below. They do not necessarily appear in any order of importance. For most of these concerns, there is a reference to the sections of the LOCAC report that follow this summary. Each section includes detailed discussions, sources of information, and specific questions and issues we wish to be addressed.

- **Project goals and selection criteria**:
  1. We believe that the primary objective of the project should be protection of the groundwater quality and supply, not compliance with regulations. The Fine Screen Report recognized basin management and seawater intrusion mitigation as the highest priority and benchmark in measuring the success of the project, but the DEIR relegates this to secondary importance behind that of regulatory compliance.

Compliance with regulatory concerns is necessary but secondary to an Environmental Impact Review. (Project Description - B, Groundwater - D)

2. The DEIR fails to recognize the project in the context of groundwater basin management. This affects assumptions on effluent reuse alternatives, conservation and surface waters quality, and the arbitrary demarcation of the Prohibition Zone (PZ). The project should contribute to Groundwater Basin Management. It must *not* have a negative impact on the Los Osos groundwater basin or the future water supply for Los Osos, particularly relating to seawater intrusion. Furthermore, imported water is not an option for the future: it will be unaffordable and most likely unavailable. (Groundwater - D)

- **Affordability: Economic and social impacts to community**

3. In order to be economically and socially sustainable, project selection must take into consideration the cost impacts relating to both capital costs and annual operations and maintenance costs, as well as the impact of financing. Given the median household income (MHI) for Los Osos of $46,558 (2000 census), a sewer bill of $200-$250 a month represents 6.44% of total income. However, this MHI includes many higher income residents who live in Los Osos but outside the (PZ), while residents in the PZ include many lower income families and seniors on fixed income, so the economic impact will be even greater. It is estimated that between 30 and 36% of the population of Los Osos will be displaced (forced to move) because they cannot afford this sewer bill. In addition, homeowners will have to pay as much as $10,000 to decommission their existing septic tank, construct a lateral connection to the collection main, and restore the landscape and hardscape of their yards.

   The DEIR neglects to discuss this critical impact of the project, indicating that this EIR document is intended to address environmental impacts only. However, other EIRs have chosen to include economic impacts; in fact, the 1987 EIR for the LOWWP gave a whole chapter to this area.

4. The DEIR also fails to address the economic impact to local small businesses due to sewer assessment and monthly costs. These are likely to result in a change to the charm and character and small town atmosphere of Los Osos due to the failure of small businesses to survive and the eventual arrival of larger chain stores.

5. The DEIR fails to disclose potential hidden or delayed costs of the project, such as harvest wells for Broderson.

- **Assumptions and use of out-dated sources of information**

6. The DEIR uses out-dated reports and information, including reliance on old population data (1990 census). We believe that these numbers are exaggerated and will lead to the design of a larger capacity sewer system and greater cost than is warranted for the population of the prohibition zone. The sizing of the sewer facilities should be based on 2000 census data and the county's projected growth rates for Los Osos and current reports for water usage. (Project Description - B)
7. The DEIR relies on information from past studies, rather than conducting updated studies employing recent technologies. For instance, it appears that no recent tests have been conducted to determine any change in nitrate levels in the upper aquifer since the building moratorium. (Project Description - B)
8. Underestimating the impact from the loss of septic system discharge could potentially result in irreparable damage to the basin if Broderson fails to recharge as projected. (Geology - F)
9. The DEIR fails to consider loss of habitat associated with residential leach fields when septic discharge is eliminated. (Biological - G)

10. The DEIR fails to analyze aggressive conservation strategies and potential impacts on the groundwater basin and seawater intrusion mitigation. (Groundwater - D)

- **Collection Systems**

11. The collection component of a wastewater system has the highest potential to affect cost, ground water quality, safety objectives for Morro Bay, operation and maintenance, installation time, and lifecycle costs. The DEIR fails to explain why alternative collection technologies were ruled out. In light of information recently made public, we urge the county to fully analyze and cost a small-pipe, sealed collection system utilizing dedicated low pressure and/or vacuum technologies. (Project Description - B)
12. The DEIR fails to fully analyze the varying life cycles and replacement costs for gravity and STEP systems. (Project Description - B)
13. The DEIR fails to make clear the impacts of Inflow and Infiltration (I/I) in a gravity (unsealed) collection system on groundwater and the increased load on the treatment plant. It also fails to address the impact of a gravity system's inevitable exfiltration on groundwater, as well as risks associated with seismic events. (Groundwater - D, Project Description - B)
14. The DEIR fails to fully analyze the impacts on roads from deeper trenching required for gravity collection mains. Due to the sandy soils of Los Osos, it has been estimated that roads restored after construction would buckle later after settling. (Geology - F)
15. The DEIR fails to make clear the impact on traffic, noise, and air quality from the longer construction time for gravity collection system. (Traffic - J, Noise - L, Air Quality - K)

- **Treatment Plant Site**

16. The DEIR fails to fully analyze impacts of Tonini as the site for treatment and/or disposal (throughout).
17. Tonini has a higher rated soil (Class II) than Giacomazzi/ Branin (Class III). (Land Use - C)
18. Use of Tonini results in the greatest loss of agricultural acreage, compared to Giacomazzi/ Branin. (Ag – M, Fine Screen, Section 6.3)
19. Applying effluent that has only received secondary treatment to Tonini spray fields may render this prime agricultural land unusable for crops for generations. (Groundwater – D, Ag - M)
20. We strongly recommend the use of conservation easements along the pipeline from town to the treatment plant to protect against potential growth inducement. (Growth Inducing Impacts - 6)

- **Treatment Technologies:**

21. Tertiary treatment is required for agricultural and urban reuse. Moreover, the trend for health standards and regulations to become more stringent is evident. Therefore, we believe that tertiary treatment should be designed, costed, and constructed from the beginning to allow for the greatest selection of beneficial reuse. (Groundwater - D)
22. Assuming opportunity for urban reuse, any treated effluent conveyance system ('purple pipe") cannot mix secondary and tertiary-treated effluent without degrading the entire stream. The DEIR fails to analyze the implications of a shared purple pipe for Broderson and urban reuse when effluent is only treated to secondary levels for Broderson. (Groundwater – D)

- **Effluent Reuse and Disposal issues:**

23. Tonini spray fields represent a permanent loss of water to the basin and contribute to the serious risk of needing imported water. The use of spray fields should only be considered as a temporary, short-term, emergency alternative of disposal for treated effluent. (Project Description - B, Groundwater - D)
24. The DEIR fails to fully analyze and discuss Agricultural and Urban Reuse as alternatives that meet project objectives of protecting water quality and replenishing the aquifer. It is **cheaper** (both capital costs and annual O&M), **smarter** (from a SWI mitigation standpoint), and **safer** to pursue agricultural and urban reuse *NOW* and minimize the need for spray fields.
25. Based on independent expert opinion, we believe that Broderson's ability to recharge the upper and lower aquifer is questionable, and that application at Broderson poses the serious risks of liquefaction and landslide. If Broderson fails, we have underestimated the irreparable harm that will occur when current septic system discharge flows are removed from the basin to spray fields. (Geology - F)
26. The project must not risk jeopardizing the quality of the Los Osos aquifer and groundwater through discharge of effluent treated only to secondary levels. Any discharge at Broderson must comply with Department of Health Services requirements for discharge into a potable water supply. (Groundwater - D)
27. In the DEIR's consideration of using Broderson for recharge, it fails to consider the increasing issue of emerging contaminants. If Broderson is used, potential costs relating to reverse osmosis must be addressed. (Groundwater - D)
28. The DEIR fails to fully analyze the impacts associated with risk of liquefaction and landslide at Broderson. (Geology - F)
29. The DEIR fails to adequately address the impacts on noise, traffic and air quality when the Broderson leach fields are re-constructed every 5 to 10 years. (Noise – L, Traffic – J, Air Quality – K)
30. The DEIR fails to disclose the impacts and potentially delayed costs relating to discharge at Broderson, such as harvest wells, reverse osmosis, and fines relating to potential liquefaction and landslide.

- **Conservation**

31. One of the only sure ways to reduce pumping from the aquifers is conservation. We believe that alternative conservation strategies must be fully explored and aggressively implemented as part of the wastewater project. This will require the leadership and cooperation of the County, the CSD, the water purveyors, and members of the community. (Project Description - B)

- **Drainage and Surface Water Quality**

32. We strongly recommend that the county consider storm water as a resource, and request that they analyze alternative methods of controlling and utilizing drainage and runoff. We urge the county to analyze Low Impact Development (LID) strategies to enhance storm management and rainwater harvesting. LID components also offer the potential for many grants to help reduce overall costs. (Drainage - E)

- **Air Quality and Energy Footprint**

33. The DEIR fails to explore "green" alternatives for renewable energy, ecological treatment technologies, and environmentally responsible sludge handling. Given the "green" goals of the forthcoming stimulus package, it behooves us to pursue these alternatives from the beginning. (Air Quality - K)

- **Septage Receiving Station**

34. The DEIR assumes that a septage receiving station will be constructed, regardless of the project selected. In the associated technical memorandum, it was concluded that a septage receiving station is unnecessary, costly, and will never pay for itself. Furthermore, it promotes the possibility of Tonini becoming a regional sludge handling center. (Project Description - B)

In summary, we strongly urge the county to employ strategies and technologies that *eliminate* potential environmental impacts, rather than simply mitigate them. We endorse and urge the County to consider our concerns and adopt the goals for the LOWWP as stated by the Sierra Club (Santa Lucian, January 2009):

> ***We want a project in which treated wastewater is a resource to be utilized, not a pollutant to be disposed of;***
>
> ***Where water demand and use is reduced;***
>
> ***Where an aquifer is recharged and protected against saltwater intrusion;***
>
> ***And where minimal sludge is created for disposal.***

# PROJECT DESCRIPTION
## DEIR Section 3 and Appendix B

SUMMARY

The County promised the people of Los Osos that the EIR document would provide answers to the recurring questions of how the various alternatives would meet the objectives of the project and how and why each proposed project component was selected over others that were reviewed in earlier phases. They were expecting somewhere in this EIR report not just the detailed technical analysis but also a complete explanation in simple language. The public waited a long time for the DEIR to be published. One would expect that the Project Description section of the DEIR would be what the general, non-technical public should read to understand how and why the County came up with the proposed four projects as the environmentally preferred options over other combinations of collection, treatment and disposal. Unfortunately, after reading this section, one still doesn't understand how or why the proposed projects meet the project objectives whereas alternative components do not.

The main issues with this section are:

- The primary objective of the project as described in this document should be protection of the groundwater quality and supply, not compliance with regulations, which, in itself is not specifically an environmental consideration.
- Population data for Los Osos is exaggerated because of old census figures, potentially resulting in overstated flows and loads and over sizing the treatment plant.
- A definition of project life-cycle from which to compare environmental impacts and overall project costs of the various project alternatives is missing.
- A discussion of all discharge and reuse alternatives that meet project objectives of protecting water quality and replenishing the aquifer is missing.

DISCUSSION, INCLUDING QUESTIONS TO BE ADDRESSED

**3.1 Project Objectives (pp. 3-1 to 3-9 of draft EIR)**

1. **Why isn't reducing seawater intrusion a primary objective for the current project?**

The description of the project history and background information has not been updated to the present time. The most glaring omission is that there is no discussion of the seawater intrusion into the lower aquifer and the impact that this has and will have on the Los Osos water basin. This is the most important water-related issue in Los Osos, even more so than the nitrate issue. Although this was known to be occurring prior to the last sewer project, it wasn't until last year (2008) that the Board of Supervisors certified a Level III severity. This is such a serious situation that balancing the water basin by reducing seawater intrusion into the aquifer should be one of the primary objectives of this project, not a secondary objective.

2. **What constitutes a successful project in terms of nitrate reduction?**

If one of the objectives of the project is the reduction of nitrates in the groundwater, then there should be some mention in this overview of whether the nitrate problem has increased, decreased, or stabilized during the prohibition period, or if the building moratorium and current steps to mitigate the problem have improved the situation. In other words, there should be some mention of what would constitute a successful project in terms of the quality of the groundwater.

3. **Where is explanation of why Prohibition Zone is targeted for collection and treatment and not entire Los Osos?**

The project background doesn't explain why the project covers only the prohibition zone and not the entire Los Osos community, since eventually all most likely will be using the facilities. **How will the project be configured so that there isn't an unfair assessment on the PZ?** This is a question nearly everyone asks and it should be explained here.

**4. What percentage of the population and housing figures should be used for the Prohibition Zone?**
The concept of buildout, including the population and number of dwellings that this represents, is not explained. The description should include the percentage of Los Osos that is covered by the prohibition zone (PZ) and outside the prohibition zone – now and at buildout, if they will be different. It's difficult when looking at the tables throughout the DEIR to tell if the data refers to only the PZ or to all of Los Osos. Some people say that the PZ percentage is 87% of the total population, but not all tables in DEIR agree with that.

**5. What is the definition of project life-cycle?**
A secondary objective of the project is to minimize life-cycle costs and affordability impacts to residents. However, the project description does not indicate how far into the future this project and its associated costs and environmental impact are supposed to cover. In other words, what is the expected life of this project – does it differ depending on alternatives chosen? At what point in the project life-cycle must elements be replaced and/or project restarted or redone? This will be very important when looking at relative costs of project alternatives. Since there's no mention of what year projected buildout is supposed to occur, it isn't clear that buildout will occur within life of this sewer project. How can this EIR be evaluated for the preferred project without costs being reasonably estimated for the life of the project?

**6. Why is there no discussion of tertiary treatment and reuse?**
There should be an explanation of the meaning of the effluent and recycled water limitations that are referred to in Table 3-1: Effluent and Recycled Water Limitations. What is meant by treated effluent – into or out of what? And by recycled water – secondary or tertiary? This whole section is not clear and inadequate as discharge objectives. There should be some mention of acceptable discharge alternatives here that meet project objectives of replenishing the aquifer, including purple pipe, etc. Would that not be tertiary treatment?

## 3.2 Project Location (pp. 3-9 to 3-19)

**7. Explanations of terms and project sites are confusing.**
General comments in this section are not clear, especially discussion of project components in and out of Wastewater Service Area. The term project site has a different meaning depending on which aspect of the project is being referred to. Introducing the four projects here without explanation is confusing – should have just described characteristics of each setting evaluated for each aspect without mentioning proposed projects yet: collection (dwellings to be collected), conveyance (streets, right of way, etc.), pump station sites, treatment plant sites (may vary depending on treatment option), disposal conveyance, disposal sites.

**8. Why is the Mid-town site needed if alternative disposal methods are used?**
The DEIR assumes that Broderson will be used for disposal for all project alternatives. Another collection site could be used if alternate disposal methods are chosen, such as purple pipe or other reuse. There is no mention of any other central collection site closer to the project treatment site – why not closer to South Bay Blvd., assuming treatment plant is outside of town?

**9. Why is the Mid-town site needed for STEP collection?**

Another collection site could be used if the STEP collection system is chosen, since the central pump station is not necessary. There is no mention of any other central collection site closer to the project treatment site – why not closer to South Bay Blvd., assuming treatment plant is outside of town?

**3.3 Project Characteristics (pp. 3-19 to 3-67)**

**10. Why are the 1990 census figures used instead of 2000 and the updated population data from the County? How can the flows and loads and sizing of the facilities be justified with exaggerated population figures?**

The population figures that are used in the entire DEIR do not represent the current data supplied by the county. The 2000 census data, not 1990 that is mentioned in this section, indicates that the current population is 14351 (current housing study says 14277 – don't know why data isn't exactly the same). Over the past 5 years, there have been many studies and projections made about the lack of growth in population in the Estero Area and particularly Los Osos, due to the building moratorium and the potential water shortage. For the past few years, the growth rate has been about 1%. The flows and loads figures that are used in the DEIR are exaggerated because the current and projected population figures are too high. The Estero Area Update for Los Osos (which hasn't been approved yet) shows the buildout population for all of Los Osos to be 19713. One of the reasons that this plan hasn't been adopted yet for Los Osos is because there was a question about even this buildout figure being too high, given the water situation. The most recent San Luis Obispo County Population study (July 2008, per Morgan Torell) shows the population of Los Osos by 2030 at only 18670 .This is a far cry from the 28688 buildout population figure in Table 6-2 of the DEIR.

**11. Why weren't all viable alternatives included in the description of each element?**

This section should include a summary of all viable alternatives for each project aspect (collection, conveyance, treatment, disposal, onsite, etc.) and a brief explanation of why or why not they aren't considered further in the document, as described fully in the alternatives section (assuming these are fully addressed there). **Where is the rationale for the County assumptions that all four proposed projects require mid-town collection, use of Broderson, and the Tonini site in order to meet project objectives?**

**12. Why does the section on costs and funding include only the project alternatives chosen rather than all the alternatives presented during the rough and fine screening processes? Does this mean that no other options are possible?**

The public has waited a long time to see true cost estimates for all project alternatives, not just the four preferred projects as described. Two of the alternative collection technologies, low pressure and vacuum systems, are not described, although the community had asked that they be analyzed and compared as they believe that they are more cost effective when looking at the project as a whole.

**13. Where is the description of project life-cycle? Does the definition of life-cycle differ by technology?**

One of the objectives of this project is to minimize life-cycle costs. Without a clear life-cycle definition, the O&M costs can not be accepted as presented. At some point, maintenance or replacement must occur for many components.

**3.4 Intended uses of DEIR (pp. 3-67 to 3-79)**

**14. Where is the comment that the public will use this DEIR to assist in survey?**

The DEIR has been promised for months as the public's answer to most sewer questions in order to respond to the County's survey on viable alternatives. Where is mention of the public's use of this DEIR to assist in their decision about preferred project elements? The public's use of this document for this purpose isn't included here.

# LAND USE
## DEIR Section 5.1 and Appendix C

SUMMARY

There are County General Plan and Coastal Land Use policies that discourage loss of agricultural land. The proposed revisions to the Conservation and Open Space Element continue to reinforce the necessity to conserve and protect open space and prime agricultural land. However, the justification for the proposed use will most likely be covered by a "Statement of Overriding Consideration" which can be crafted based on the explicit need for a public waste water treatment facility.

DISCUSSION

The Tonini site was not considered during the initial Fine Screening reports. The DEIR is not clear at what point it was proposed, however, clearly the potential threat of a lawsuit by property owners in the outlying areas and the cemetery would be reason enough for the County to look for another site. However it was decided, the DEIR does evaluate the potential impacts associated with this site and concludes, however narrowly, that this is the preferred location.

Tonini is 650 acres, with 175 acres proposed for removal from the Agricultural Zoning designation. The proposed treatment area is 32 acres. Under the permitted uses of the Agricultural Zone, public utilities and related facilities are allowed uses. To minimize the loss of prime agricultural land, the DEIR proposes mitigation that would designate equal agricultural land nearby to a perpetual conservation easement, through some means such as an easement or deed to the County. This would be permanent conservation of equivalent land. Other mitigation is very typical: buffer zones and fencing to control livestock.

Regarding impacts associated with Land Use, the DEIR finds that there are no impediments because the zoning allows consideration of utilities and there are no other feasible sites for sprayfields and this site is better suited than other sites in the area. Clearly, this is not true because three other sites were analyzed. In fact, it may be preferred to use the Giacomazzi site because it has allowed grazing on soils of less prime importance.

Waste water treated to a secondary level can be used on sprayfields where no edible foods are grown. Tertiary treatment is needed for irrigation of crops. It is not likely that tertiary treatment will occur because it costs more money. The DEIR argument that it "would take a number of years to develop a relationship with growers to begin using treated effluent for crops" is probably not true as evidenced by the growing need for an adequate water supply.

ISSUES

1. **Is the recharge to both aquifers enough to allow full buildout to Los Osos?**
   The DEIR does not address the full recharge to both aquifers in any meaningful way. It would appear that there are "expectations" by property owners within the Prohibition Zone, that the approval and development of the Waste Water Project will ensure building permits.
   There needs to be an adequate discussion of this because the DEIR is misleading.

2. **How is the proposed project in conformance with the General Plan/Estero Area Plan if the DEIR does not discuss this potential need for a future water expansion project?**

Should the WWP not provide enough ground water recharge for full build out, then it would necessarily lead to a conclusion that another, future water improvement/capacity project would be in the works.

3. **Would the County agree that referencing the General Plan Build Out number in the DEIR alludes to the ability to have full build out?**

4. **Does the DEIR discuss when full buildout will occur? And, what quantifiable measures are proposed to predict adequate water supply to support full build-out?** Adequacy of water supply is necessary for full build-out. There is one section that mentions ***build out has some natural limitations to growth*****: habitat conservation plans and water supply**. But, this is not enough of an explanation to future growth capacity and timing.

# GROUNDWATER QUALITY RESOURCES
## DEIR Section 5.2 and Appendix D

SUMMARY

**LOCAC** affirms and concurs with the **NWRI Panel and Key Environmental Impacts Statement* goals for a sustainable project, in that, the LOWWP shall:**

**1) Provide greatest protection against overflows and other releases of partially or untreated wastewater from the system, which could pollute Morro Bay and other sensitive coastal ecosystems.**
**2) Provide the greatest possible protection to groundwater of the Los Osos Basin.**
**3) Avoid environmental impacts relation to construction and installation to the greatest extent possible, including impacts of open trenching (e.g. dewatering, soil stabilization, street reconstruction).**
**4) Avoid impacts to m\Native American Chumash sites.**
**5) Provide the most energy-efficient solution and enable the use of clean, renewable energy sources, avoiding environmental impacts (GHG emissions).**

*KEI Statement was produced by the Appropriate Technologies Coalition, including SLO Green Build, Sierra Club, Surfrider, and endorsed by Terra Foundation, Los Osos Sustainability Group, and Northern Chumash Tribal Council.

**LARGEST CONCERNS RELATING TO GROUNDWATER QUALITY RESOURCES:**

1. **The LOWWP must *not* have a negative impact on the LO groundwater basin or the future water supply for Los Osos, particularly relating to seawater intrusion.**
2. **The LOWWP must not risk jeopardizing the quality of the LO aquifer and groundwater.**
3. **The LOWWP plan for reuse and disposal must contribute to the basin management plan and ensure that there will be no need for imported water in the future. Squandering our groundwater basin violates recent State legislation. Furthermore, a desalination plant and imported water are unaffordable, while imported water will likely be unavailable.**

**ANALYSIS:**

**I. Aquifer Balance and Seawater Intrusion:**

**A. The DEIR appears to underestimate septic return flows and the potentially negative impacts of removing them from the hydrologic (recharge) cycles of the basin. This could lead to the project potentially increasing seawater intrusion.**

The DEIR states 957 AFY of septic flows will be eliminated with the project, of which about 600 AFY are recharging the upper aquifer. However, 957 AFY represent the septic flows with the project's conservation element in place (160 AFY) (see Table 5, Appendix 2-D, DEIR). The conservation element will not be in effect until project start-up. Therefore, a reasonable estimate of total septic flows eliminated with the project is between 1100 and 1200 AFY.

Of this about 900 AFY leaks to the upper aquifer as recharge; however, the DEIR states that only about 600 AFY recharges the upper aquifer (Table 8, Appendix D-2, etc.). According to the DEIR, the current sources

of recharge to upper aquifer (Zone C) include: rainwater percolation and irrigation (1489 AFY), septic return flows (606 AFY), subsurface inflow (112 AFY), and/or subsurface cross flow (788 AFY) (Table 8, Appendix D-2)—but the last category of recharge is from the perched aquifer, and the perched aquifer is 46% septic flows (631 AFY of 736 AFY). Therefore, 46% of 788 AFY, or 362 AFY of additional septic flows, contribute to upper aquifer recharge, or about 900 AFY total.

Tables 9 & 10, Appendix D-2, show conditions after the project is installed (with reuse/disposal Projects 2a and 2b in place). These tables reflect only 69 AFY less recharge to the upper aquifer from the perched aquifer with project implementation, instead of about 300 AFY less. The largest reduction resulting from removing septic flows from the perched aquifer is flow to Willow Creek (down by 517 AFY). The DEIR does not explain why removing septic flows from the perched aquifer would impact Willow Creek by 90% and the upper aquifer by less than 10%--and the finding on its face is illogical. It is more reasonable to assume that the removal of septic flows will impact both receiving sites equally. When referring to the flow pathways of water in the perched layer, the Yates and Williams study states, "Nitrogen associated with recharge in zones overlying the perching clay was allocated to the four pathways (leakage to lower levels, lateral receiving zones, transpiration, and Willow Creek) in the same proportions as flow" (p. 9). The study points out that the only losses to the groundwater flow system were the last two categories, transpiration and flow to Willow Creek. Therefore, recharge to the upper aquifer will likely be reduced by about 300 AFY more than presented in the DEIR, requiring greater mitigations than Broderson leach fields provide, in order to avoid negative impacts to the basin.

Removing a total about 900 AFY of septic flows (600 AFY plus 300 AFY) from upper aquifer recharge throws the upper aquifer out of balance, as shown by Tables 9 & 10. The significant additional reduction to upper aquifer inflow would mean one of the following occurs: 1) the upper aquifer is in overdraft (subjecting the aquifer to possible seawater intrusion), 2) less water leaks to the lower aquifer from the upper (causing increased seawater intrusion), and/or 3) even less subsurface freshwater flows from the upper aquifer to support the estuary (i.e., maintain the fresh-seawater interface) According to Tables 9 & 10, about 141 AFY less subsurface outflow will occur, with Projects 2a & 2b in place and Broderson recharge assumed to be 448 AFY. This does not count additional 300 AFY of reductions noted above. With those reductions, outflows would be reduced even more.

For all three systems (the upper aquifer, the lower aquifer, and aquatic ecosystems) the impacts would undoubtedly be significant. Thus, the DEIR should analyze a range of alternatives to avoid or mitigate for the potential impacts of removing septic return flows from the hydrological cycle, along with an analysis of their mitigations and feasibility. (See "Alternatives to Broderson" below for possible alternatives.)

## II. Broderson Leach Fields

**A. The safety, recharge effectiveness, and beneficial impacts of Broderson leach fields on seawater intrusion are uncertain.** CEQA case law has established that where there is uncertainty, the EIR should acknowledge uncertainty and discuss alternatives and mitigations. The following are some of the uncertainties:

1. The DEIR assumes and states with certainty that 100% of the discharge applied at Broderson will recharge upper aquifer, and 22% will recharge the lower aquifer. Based on this assumption, the DEIR claims that the project will fully mitigate for the removal of septic flows. This assumption is based on scientific modeling and analysis with substantial margins of error (e.g., steady state models often with more than 10% standard deviation). It is possible Broderson leach fields will not recharge the upper aquifer, the lower aquifer, nor support sensitive ecosystems at all, contrary to claims in the DEIR (e.g., p. 5.2-19). The Yates & Williams study in 2003 indicated that water tables in the upper-most water

layer (the perched aquifer) would drop 10 feet, in some areas drying up altogether (p. 18). The 2005 Draft Water Management Plan recommended 560 AFY of imported water as "a placeholder for mitigating sea water intrusion," even though the prior project called for Broderson to recharge even more water than the current project, and it called for testing the upper aquifer water "to determine the actual production and water quality constraints on upper aquifer use for potable supply" (p. 10). Due to the uncertainties of Broderson, County staff (e.g., Paavo Ogren, the Public Works Director) have indicated the County will begin discharging water to Broderson leach fields at less than 448 AFY, slowly increasing discharge to 448 AFY. In the meantime, more effluent would be applied to spray fields at Tonini than planned for Project 2b, and the upper aquifer would be in overdraft, according to estimates in the DEIR (e.g., Tables 9 & 10, Appendix D-2). (Note: Slow start up of Broderson leach fields would make the potential overdraft and negative impacts of the project even more significant than stated in "I" of this analysis.)

2. The DEIR asserts that Broderson leach fields will percolate recycled water safely at a rate of 448 AFY, without causing liquefaction or slides (damaging homes) and without causing water to surface downhill from the site (causing harm to property or sensitive ecosystems). At least two authorities, Larry Raio and Dr. Tom Ruehr, have contradicted these claims (see Geology discussion in this report). The DEIR should acknowledge the uncertain benefits and potential negative impacts of Broderson and include more thorough analysis of alternatives, mitigations, and the feasibility of alternatives and mitigations that address these uncertainties.

3. The DEIR states that the water discharged at Broderson leach fields will have to meet the standards set for the last project, i.e., the Waste Discharge Requirement (WDR) for the project (p;. 3-8 & 3-9). This is uncertain. In fact, the California Department of Public Health (CDPH), which sets standards for water recharged in aquifers, is recommending stricter standards. The WDR must concur with CDPH standards, so the requirements for the LOWWP are likely to be more stringent. The NWRI states: "If the Broderson site is used for effluent disposal, it is important to evaluate compliance with the new DHS Groundwater Recharge Reuse criteria (because there is no vadose zone and there would be intentional recharge to the upper aquifer, which has historically been used for potable supply." (NWRI report on the LOWWP in 2006, Section 3.5.3)

**B. Alternatives to Broderson**: If the Broderson leach fields don't perform as the DEIR indicates or treatment requirement for the recycled water proves to be cost prohibitive, there is little flexibility with Project 2b (the preferred alternative in the DEIR) to avoid significant negative impacts on the basin. The following are some alternatives that should be analyzed:

1. Higher levels of conservation than currently called for (e.g., a 25% reduction in indoor use is achievable according to authorities (e.g., Gleick et al. in *Waste Not Want Not*, 2003). A similar or greater reduction in outdoor use is possible. Both might possibly be implemented via ordinances, similar to the conservation ordinance approved by the LOCSD prior to the last project.

2. Agricultural exchange, graywater reuse, rainwater harvesting, and urban reuse. Like conservation, these reduce pumping of the aquifers, so they are the most certain and rapid ways to stop seawater intrusion).

Note: The county maintains that contracts with farmers would take a long time. However, attractive water exchange rates, along with the other benefits farmers receive, e.g., reduced expenses for nitrate fertilizer use, reduced energy use for pumping groundwater (90% of the energy use for farmers), and compliance with RWQCB nitrate management requirements) make successful negotiations likely. The County further maintains that it cannot implement measures that achieve greater levels of mitigation than the currently

proposed Projects 2a-2c. However, it is responsible for fully and safely mitigating for the project. Furthermore, AB 2701, which authorizes the County to build the project, also authorizes the county to address basin balance and seawater intrusion related to the project**.** Pursuing these options now saves capital and O&M costs, as well as duplicated costs (since they will need to be done later), and they will help ensure adequate mitigation for the project's potentially negative impacts on basin water supplies, e.g., seawater intrusion.

## C. Relevant findings, quotes, and laws

1. The NWRI peer review of the Ripley Pacific proposed project in 2006 and the NWRI review of the LOWWP proposed alternatives in 2008 state: "If Broderson is used, it is important to evaluate regulatory compliance, particularly with regard to CA Department of Public Health groundwater recharge regulations."
2. The Santa Lucia Chapter of the Sierra Club quotes: "The DEIR contemplates only secondary treatment of effluent. The evolution of state and federal standards for wastewater treatment has been heading in only one direction – up – and it is like that tertiary treatment will be required by law by the time the LOWWP is completed." **Tertiary treatment should be designed into the project from the beginning in anticipation of increasingly stringent regulations"**

   "**No one can afford for the County to be wrong in its assessment of this key component (Broderson leach field recharge). There are serious questions surrounding the science and regulatory compliance in the selection of Broderson as a viable site for disposal of effluent and recharge of the aquifer. The Final EIR needs to provide scientific analysis confirming that Broderson can accommodate the high rate of effluent proposed, at the proposed level of treatment, and that this is the best means by which to replenish the aquifer and significantly reduce saltwater intrusion."**

3. AB 2701**:** Referring to the County's authority to implement the project, AB 2701 states: "These efforts may include programs and projects for recharging aquifers, preventing saltwater intrusion, and managing groundwater resources to the extent that they are <u>related</u> to the construction and operation of the community wastewater collection and treatment system" (emphasis added).

4. CA Department of Public Health, Drinking Water Program, draft regulations for Groundwater Recharge Reuse, dated August 5, 2008:
§60320.047. Additional Constituent Monitoring Pharmaceuticals, endocrine disruptors, and other wastewater indicator chemicals

Section 60320.045. Total Organic Carbon Requirements
(a) For each surface or subsurface application facility used for replenishing a groundwater basin, the GRRP shall monitor TOC as follows:
- (1) For filtered wastewater, unless subsequently treated with reverse osmosis, two 24-hour composite samples a week, taken at least three days apart. Based on the Department's review of the previous 12 months' results, with approval from the Department, monitoring may be reduced to one 24-hour composite sample each week, and
- (2) For recycled municipal wastewater, at least one 24-hour composite sample each week prior to recharge, or
- (3) For surface application, at least one sample each week in a manner yielding TOC values representative of the recycled municipal wastewater TOC after infiltration and percolation, and not influenced by diluent water, native groundwater, or other source of dilution as determined by:
  - (A) measuring undiluted percolating recycled municipal wastewater,
  - (B) measuring diluted percolating recycled municipal wastewater and adjusting the value for the diluent water effect, or

(C) using recharge demonstration studies to develop a soil treatment factor that can be applied weekly to recycled municipal wastewater measurements leaving the treatment plant.

(b) Grab samples may be taken in lieu of the 24-hour composite samples required in subsection (a) if:

(1) the GRRP demonstrates that a grab sample is representative of the water quality throughout a 24-hour period, or

(2) the entire recycled municipal wastewater stream has been treated by reverse osmosis.

(D) A health risk assessment of the potential individual and cumulative effects of the regulated contaminants described in section 62320.030 and the constituents monitored pursuant to subsections 60320.047(a) and (c), in a manner that includes;

(1) lifetime risks of cancer and

(2) risks of non-cancer effects.

(E) A report detailing comments, questions, concerns, and conclusions of a review by an independent scientific peer review advisory panel that includes, as a minimum, a toxicologist, an epidemiologist, an engineering geologist or hydro geologist registered in California, an engineer licensed in California with at least three years of experience in wastewater treatment and public water supply, a microbiologist, and a chemist.

5. Note that any mixing of sewer effluent with the potable water supply for Los Osos/ Baywood Park may contaminate that supply. Advanced Oxidation and RO, expensive treatment processes, would be required to reduce endocrine disruptors and other emerging contaminants to very low levels. Some of emerging contaminants (e.g., NDMA) are known carcinogens. Studies show endocrine disruptors can cause abnormalities in marine life and may cause premature secondary sexual characteristics such as early adolescence or puberty, in humans. They can also increase the chances of some types of cancer, e.g., uterine.

## III. Hybrid Gravity Collection System

**A. The DEIR must include a detailed discussion of infiltration (I/I) and exfiltration to enable decision makers to make informed decisions about the relative environmental impacts of the systems.** The higher levels of inflow and infiltration (I/I), in addition to exfiltration, make this system significantly more likely to pollute (i.e., negatively impact) the groundwater supply and surface waters in the area than sealed pipe systems. Further, design elements and installation requirements make it more likely to result in significant environmental impacts. The DEIR omits a discussion of I/I and exfiltration altogether and includes only a cursory discussion of construction impacts.

1. I/I refers to inflow (water leaking into a system from the surface) and infiltration (water leaking into a system from below ground). Exfiltration is wastewater leaking out of the system. The hybrid gravity system planned for the LOWWP will have significantly more of all three than sealed small-pipe systems. This is a commonly acknowledged fact in the wastewater industry; in fact, the design capacity of the gravity collection system for the LOWWP is almost 20% larger (1.4 million gallons per day versus 1.2 mgd) than for sealed small pipe systems due to greater I/I, and the EPA points out that exfiltration results from the same cause, i.e., leaks in the system. Conventional gravity system pipes (the type planned for 95% of the LOWWP hybrid-gravity system) leak more because they are rigid, bell and spigot, gasketed pipes that can shift or become compressed breaking the gasketed seals of the connections. In fact, the LOWWP gravity system is assumed to leak more even when it is installed, as the Fine Screen Report bases the design capacity on industry installation standards for new systems (p. 1-10). These show the tolerances for new systems. Peak flows for the LOWWP gravity systems during rainy weather are estimated to be 2.5 mgd versus 1.7 mgd for sealed, small-pipe systems—due to increased I/I. The EPA identifies excessive I/I as a main cause of overflows, and overflows as a leading cause of pollution of surface waters. This is confirmed by beach closure reports in California. The 2000 report states, “The primary causes of overflows were sewer line overflow, breakage, and blockage” (p. 13). An EPA report on exfiltration in 2000 confirms that “surcharged pipe systems” (from excessive I/I) is the usual cause of overflows, and it indicates the cause of exfiltration is the same as I/I, leaks in pipes.

It adds that "Exfiltration can result in discharges of pathogens into residential areas; cause exceedances of water quality standards (WQS) and/or pose risks to the health of the people living adjacent to the impacted streams, lakes, ground water, sanitary sewers, and storm sewers; threaten aquatic life and its habitat; and impair the use and enjoyment of the Nation's waterways" (pp. 1 & 2).

2. In heavy and prolonged storms, which must be assumed to occur during the life of the LOWWP, excessive I/I in the conventional gravity system planned for Los Osos will be impossible to control. (Note that the 5% low pressure component, a seal component, of the LOWWP is planned only for homes that need to pump wastewater uphill to the collection pipes, i.e., the sealed component is not planned to reduce I/I, e.g., in high ground water areas; thus it not significantly reduce I/I.) During one storm in the Central Valley in 2006, millions of gallons of untreated or partially treated wastewater was released, causing incalculable environmental damage. Due to excessive I/I problems, the California Men's Colony system has overflowed, polluting the National Estuary on several occasion.

3. Small-pipe sealed systems (STEP/STEG, a 100% low-pressure, or vacuum system) will not only leak less than the gravity-hybrid system planned for the LOWWP, they are better able to control leaks and overflows due to several design features: 1) the shallow pipe installation of the pipes under low pressure make leaks easier to identify, isolate, and repair, 2) each of the systems has substantial reserve capacity in tanks or vaults to take in sudden inflow and distribute it to the collection system over time (especially true of STEP/STEG systems), and 3) the systems can be monitored and controlled remotely to identify leaks and control flows in many cases). The hybrid gravity system, on the other hand, has design elements that make it inherently more prone to overflows and releases (in addition to the gasketed pipe connections mentioned above): 1) manholes, where some reserve capacity exists, are also a main pathway for inflow during wet weather and overflows when the system surcharges, 2) the system has very little reserve capacity in proportion to the size of flows, 3) the system's limited number of relatively large pumps makes pump failure more likely to cause a serious overflow, and 4) since the system relies on gravity and exact gradients to work properly (rather than pressure), blockages are more likely to occur due to grease, tree roots, damage, or shifting pipes (e.g., in earthquakes).

4. The installation techniques for the LOWWP gravity system will also cause more potential impacts to the environment, infrastructure, and community as a whole than the other systems. It requires deep trenching mostly down the paved lanes of the community, so streets will be unsuable during installation. Further, repair of streets, especially streets in the state of ill repair of Los Osos streets, will likely not be reparable in all cases and many will likely require replacement. Small-pipe sealed systems can be installed either with horizontal boring and/or shallow narrow trenching along the sides of streets, causing much less impact. Further, deep trenching will potentially impact groundwater supplies and quality, in highground water areas. Groundwater, likely contaminated from septic systems at the upper levels, will have to be dispensed. The DEIR indicates this it can be put into the open trenches after pipes have been laid, but this mitigation is not likely to handle all the water encountered and may cause trenches to become unstable.

5. Because of the type of pipe (rigid and gasketed, rather than sealed and flexible) and the design elements (mentioned above), the gravity system will be much more prone earthquake damage. Its construction methods (deep trenching), significant environmental impacts from installation (under pavement, with dewatering, and soil destabilization, etc.), and its high construction costs, may make this system infeasible to repair if a serious earthquake occurred, which has a high probability during the life of the project.

6. The Fine Screen Report states that I/I can be reduced by "fusing welding" or with a special maintenance program; however, it indicates that these measures add expense to the system. This expense and the

specifics of the programs were not discussed, but can be assumed to not be included in the cost of the system or its design.

7. The impacts of global warming (e.g., sea level rises and the possibility of fewer but heavier storms) could disproportionally impact a gravity collection system. If a gravity system leaks sea water in as a result of rising sea levels (e.g., near the bay), it will degrade the wastewater stream requiring much higher, and more expensive levels of treatment (e.g., RO), and/or disposal of the water in ways that may harm the environment.

**B. Collection system alternatives, feasibility, and life-cycle costs**

1. A 100% low-pressure system, 100% vacuum system, and a hybrid low pressure-vacuum system should be analyzed in the DEIR in some detail. The DEIR a one-line remark explaining why the low pressure and vacuum systems were not considered, (i.e., "higher maintenance requirements and energy costs", p. 7-21), which it repeats as entries in Table 7-5 (pp. 7-23 through 7-25). However, the report provides no sources or data to support these conclusions, and the Technical Memorandum (TM): Low Pressure found that the low pressure system had lower maintenance costs than a STEP/STEG system (e.g., pp. 20 & 21), with the update to the TM incorrectly assuming low pressure systems would use 2 hp pumps; rather than 1 hp pumps (per representatives of E-One at a November 2008 presentation in Los Osos). Further, at least one community contacted for the Rough Screening (as a case study) indicated operators prefered vacuum over low pressure for low maintenance costs, while vacuum system use fewer pumps than any of the other sealed-pipe systems although Table 7-5 in the DEIR indicates the systems have the "highest energy demand" of all collection systems (p. 7-23). Note: communities contacted for the Rough Screen Report chose vacuum systems due to high ground and they chose low pressure systems due to high relief terrain and proximity to surface waters—i.e., due to costs and to avoid environmental harm from collection system overflows. These same conditions describe Los Osos.

2. A gravity-low-pressure-vacuum hybrid system should be analyzed. After the LOWWP Rough Screen Report recommended a combination gravity-low-pressure-vacuum system, the Fine Screen Report failed to review the vacuum component of a combined gravity-low pressure-vacuum system. Such a collection system would address high groundwater concerns and concerns about contamination from seawater due to sea level rises along the bay. The first NWRI report recommended consideration of vacuum systems near the bay.

3. A more complete analysis of the above collection system alternatives should be done, especially since they potentially will reduce environmental impacts, while also reducing project costs. At the local presentation of low-pressure and vacuum system companies last November), company representatives indicated total system costs could be less than half the costs of systems currently considered. Furthermore, a more complete analysis of the potentially negative impacts from I/I, exfiltration, and the installation of a gravity system should be done, as well as an analysis of the system's potential impacts from earthquake and global warming. In every case the analyses should provide a thorough discussion of the feasibility of the systems and their mitigations, and it should include a **full-life cycle analysis**, i.e., far enough out to include the replacement cost of the longest lasting component of the system, e.g., 60-70 years for PVC pipe.

**C. Relevant quotes**:

1. Fine Screening Report: Inflow/infiltration (I/I) estimates for the collection system alternatives were the main source of uncertainty in calculating the future treatment facility influent flow volume. If a STEP/STEG collection system is selected it is anticipated that there will be minimal I/I since the system

is sealed and under pressure. If a gravity collection system is selected, only a system that was constructed of fusion-welded PVC piping could be operated with as little I/I as a STEP/STEG system. However, fusion welded PVC sewers are a new technology with little long-term operating history, and can be significantly more costly to install than traditional bell-and-spigot gravity sewers. Properly installed bell-and-spigot sewers will be watertight at first, and then slowly lose their integrity as the surrounding soils shift, compressing the pipes, and compromising their seals at the joints. The water-tightness of a bell-and-spigot sewer can be preserved if a maintenance program is conducted on an ongoing basis to detect and repair leaks. This program would add to the cost of a gravity sewer compared to a STEP/STEG sewer with similar levels of I/I (p. 1-9)

2. Water Reuse, Drs. Tchobanoglous, Asano, et al, 2007: "In addition to the high installation costs of centralized collection systems (gravity systems), issues with non watertight joints and damaged sections result in potentially high volumes of inflow and infiltration, or exfiltration in the collection system. Infiltration can more than double the flow rate and dilute wastewater constituent concentrations arriving at treatment facilities in extreme cases. Long-term infiltration into a collection system can also lower groundwater levels. Exfiltration from collection systems may result in groundwater or surfacewater contamination. While large centralized collection systems are not intended to leak, the nature of large rigid pipes buried in various soils results in more leaks and damage to pipe sections over time. Further, it is costly to identify and repair sections of damaged underground collection system, especially when located below roads and buildings in developed urban areas. Piping used for decentralized facilities (STEP/STEG, etc.) is mostly small diameter flexible plastic pipes, typically of polyvinyl chloride (PVC) with solvent welded joints or medium density polyethylene (MDPE) with compression joints which can be designed for high pressures or vacuum where alternative collection systems are used. Flexible plastic piping is much less likely to leak under normal bedding conditions. These pipes can be installed easily in narrow trenches or by directional drilling that results in minimal disturbance to property and roads" (p. 769).

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**IV. Potential Environmental Impacts Collection System: STEP/STEG (and other small-pipe, sealed systems) and Gravity Hybrid.**

A. Inflow/ Infiltration (I/I): The Fine Screen Report assumed an additional load of 200,000 GPD for Gravity (1.4MGD) more than STEP/STEG (1.2 MGD) due to I/I.
   1. The loss of rainwater percolation to inflow, particularly at manholes and pump stations, diminishes recharge of aquifer, lowers groundwater levels, and places additional load on the treatment plant.
   2. Leaks are harder to detect, and more costly to repair with a Gravity system. (Example: Northridge earthquake damage.) And routine flushing requires use of precious water resources.

B. Exfiltration: Inevitable leakage of bell and spigot joints (vs. sealed pipes) will contribute to pollution of the groundwater basin.

C. Sanitary Sewer Overflows (SSO) in event of storms, earthquakes, etc.
   According to the EPA, SSOs are a leading cause of surface water pollution.
   1. Gravity has less ability to moderate sudden inflows resulting from storms.
   2. STEP system has reserve capacity in septic tanks.
   3. STEP system has remote monitoring to ensure prompt response to problems.
   4. Gravity pipes are more susceptible to sifting sands, which could impact joints and slope.
   5. Renowned expert Dr. Tschobanoglous states: "  (Water Reuse, p. 769)

D. Low Pressure and Vacuum collection systems were brought forward in the Rough Screen but were dropped from further analysis without explanation. Consequently, neither of these alternatives has been fully analyzed. Based on new information made public, **LOCAC recommends that other small-pipe collection systems (constructed entirely with Low Pressure and/or Vacuum systems) be fully analyzed and costed.**

## IV. Alternatives for Effluent Reuse and Disposal

1. **Greater programs and requirements for conservation, including LID rainwater retention and gray water reuse systems.** The Yates and Williams study points out that approximately half of the rainfall in the PZ residential areas is lost to runoff (Table4). This amounts to about 1500 AFY. According to LOCSD water billing, Los Osos has already achieved a substantial reduction in water usage from 298 MG (915 AFY) in 2004-'05 to 264 MG (910 AFY) in 2007-'08. With an aggressive conservation program, including commensurate ordinances and tiered billing, conservation can contribute substantially to the mitigation of removing septic return flows from the basin. This would include Low Impact Development (LID) of rainwater harvesting and gray water reuse. **We recommend that the EIR analyze the impact of various levels of conservation and the implications for negating the need for Broderson (offsetting its potential recharge)**

2. **Aggressive agricultural reuse and exchange strategies**

The Cost/ Benefit Analysis of Effluent Reuse/ Disposal Alternatives, performed by the TAC's Finance Group follows.

| Reuse/Disposal Level | Capital Costs | Annual O&M | Storage | SWI Mitigation |
|---|---|---|---|---|
| 1a: Full ag reuse 460 AF<br>Spray Fields 680 AF<br>Conservation 160 AF<br>Cemetery 50 AF<br>Total 1,350 AF<br>Storage (290 AF) | $12.7M - $14.3M | $100,000 - $190,000 | 290 AF | 140 AFY |
| 1b: No ag reuse<br>Spray Fields 1,190 AF<br>Conservation 160 AF<br>Cemetery 0 AF<br>Total 1,350 AF<br>Storage (210 AF) | $12.8M - $15.6M | $125,000 - $275,000 | 210 AF | 90 AFY |
| 2a: Full ag reuse 460 AF<br>Spray Fields 232 AF<br>Broderson 448 AF<br>Conservation 160 AF<br>Cemetery 50 AF<br>Total 1,350 AF<br>Storage (140 AF) | $13.2M - $13.9M | $400,000 - $440,000 | 140 AF | 240 AFY |
| 2b: No ag reuse<br>Spray Fields 742 AF<br>Broderson 448 AF<br>Conservation 160 AF<br>Cemetery 0 AF<br>Total 1,350 AF<br>Storage (30 AF) | $14.9M - $16.7M | $440,000 - $530,000 | 30 AF | 190 AFY |

NOTE that the capital cost of Level 2b (the preferred project in the DEIR) has the highest capital costs ***and*** highest annual O&M. Bottom line: ***it is cheaper and smarter (from a SWI mitigation standpoint) to pursue agricultural reuse NOW and minimize the need for spray fields.***

DEIR postponed and relegated agricultural reuse (both in-lieu and exchange) to the water purveyors, rather than consider it as a means of reuse/ disposal to the project. They justify this by saying that this would result in equitable cost-sharing among all users in the basin.

> According to Bahman Sheikh, Ph.D., P.E. and Dana Ripley, consultant for the 2006 LOWW Management Plan Update, the contracts with farmers which were developed in the Monterey Bay area took up to 8 years, primarily because that was the period of testing required before crop application was approved. Now that those tests have been completed and approved, the contracting period with farmers in the Los Osos Valley should be very short, particularly since discussions with farmers were already begun in 2006.
>
> Sheikh: "Over 400 wholesale water recycling projects are in operation in California… the farmers located to the east of Los Osos have indicated their willingness (indeed, their enthusiasm) for using recycled water instead of pumping groundwater from the very aquifer that needs relief to over-pumping. Just because Carollo was not tasked to speak to those farmers is not enough reason to leave these growers out of the project.
>
> **"Squandering the opportunity to enlist the farmers now in the water reuse component of wastewater management in Los Osos is a mistake."**

1 Bahman Shiekh, Ph.D., P.E. 25+ years of specialized professional experience and expertise in water reclamation, recycling, and reuse; provides consulting services to public and private clients for planned and ongoing water recycling projects, primarily in California, as well as in 20+ countries around the world. He serves on the Research Advisory Board of the National Water Research Institute and as Board member of Water Reuse Foundation.

## V. Other comments

1. The Yates and Williams study attributed the slow rate of nitrate reduction to the fact that many sources (besides septic systems) contribute to the relatively high nitrate levels in the basin (e.g. horse ranches, high-fertilizer using landscaping, and agriculture). **LOCAC recommends that the county pursue a nitrate management program**, which would likely result in a significant reduction of nitrates in the groundwater.

2. The DEIR states: "Groundwater produced by pumpers in the LO Basin has averaged approximately 3,500 AFY since 1985 and has remained relatively constant since the implementation of the 1983 building moratorium.. Private domestic and agricultural irrigation production has historically been established from land use information." **Due to the apparent expansion of agricultural and residential development on the east side of the basin, these assumptions are no longer viable.**

3. Potential Impacts of Climate Change: Gov. Schwarzenegger's Executive Order S-13-80 (11/14/08) requires project planning to account for the impacts of climate change. It recognizes the particular threat sea level rises pose for coastal communities and requires public projects to include climate change planning. **How will the county's project protect the aquifer against the impact of rising sea levels?**

<u>QUESTIONS AND COMMENTS TO BE ADDRESSED</u>

1. Impact on basin from loss of septic return flows: **What is the basis for the DEIR assumption of only 957 AFY total annual septic return flows (that would be lost to basin when WWP in complete)? If this is *after* the allowance for conservation of 160 AFY, then shouldn't it be adjusted to reflect the impact at the beginning of the project?**

2. Impact of discharge at Broderson on groundwater quality: Any mixing of sewer effluent with the only potable water supply for Los Osos/ Baywood Park risks the contamination of that supply. **How would the county mitigate this risk** without relying on imported water or desalination?

3. Groundwater Quality: **Tertiary treatment** should be designed into the project from the beginning in anticipation of increasingly stringent regulations, whether for ag or urban reuse, or Broderson. According to the TAC's Pro/Con Analysis, tertiary treatment would cost an additional $3.5M in capital costs and an additional $30,000 to $100,000 in O&M. **We would like to see the DEIR consider this design up front and get proposals for related costs.**

4. Efficacy of Broderson to recharge aquifer: Sierra Club: *"No one can afford for the County to be wrong in its assessment of this key component. There are serious questions surrounding the science and regulatory compliance in the selection of Broderson as a viable site for disposal of effluent and recharge of the aquifer. The Final EIR needs to provide scientific analysis confirming that Broderson can accommodate the high rate of effluent proposed, at the proposed level of treatment, and that this is the best means by which to replenish the aquifer and significantly reduce saltwater intrusion."* **We concur and ask that further (new) analysis be done before this means of discharge is selected.**

5. Water supply. **Imported water and/or desalination are not options for the future of Los Osos' water supply.**

6. Alternatives to Effluent Reuse/ Discharge: Agricultural Reuse: *"Squandering the opportunity to enlist the farmers now in the water reuse component of wastewater management in Los Osos is a mistake."* **(**Sheikh) **We concur and request that the county task their consultants to explore agricultural reuse of WW effluent immediately.**

7. Alternatives to Effluent Reuse/ Discharge: **Conservation** and Low Impact Development (LID) of rainwater harvesting and gray water reuse. With an aggressive conservation program, including Low Impact Development (LID) of rainwater harvesting, gray water reuse, ordinances, and tiered billing, conservation can contribute substantially to the mitigation of removing septic return flows from the basin. **We recommend that the EIR analyze the impact of various levels of conservation and LID and the implications for negating the need for Broderson (offsetting its potential recharge).**

8. Bottom line comparison of alternatives: **It is cheaper (both capital costs and annual O&M) and smarter (from a SWI mitigation standpoint) to pursue agricultural reuse NOW and minimize the need for spray fields.**

9. Collection Systems: **Fully analyze, cost, and compare other small-pipe collection systems (constructed entirely with Low Pressure and/or Vacuum systems).**

10. **Pursue a basin management plan which includes a nitrate management plan.** Such a plan would include landscape fertilization, horse ranches, domestic animal waste, agriculture, and domestic water softeners throughout the LO groundwater basin.

11. **How will the county's project protect the aquifer against the impact of rising sea levels?**

SUPPORTING DATA AND EXPERTS

[1] Yates & Williams study in 2003 estimated 36% of total upper aquifer recharge after "perching" effects = 1267/3527 AFY. (DEIR Table 4)

[2] Hopkins Groundwater Consultants estimated septic returns = 36% of total 2,995 AFY = 1,078 AFY (DEIR: Table 8, page 24)

[3] National Water Research Institute – Non-profit organization based in Fountain Valley, CA, which sponsors projects and programs focused on ensuring safe, reliable sources of water now and for future generations. They fund scientific research projects and have provided expert peer review of LOWWP in 2006 and 2008. Their interests include:

- Encouraging public support of better water practices, such as conservation and water use efficiency.
- Implementing strategies that better allocate and sustain water resources on regional and national levels.
- Protecting existing water supplies from impacts on quality and quantity.
- Developing technologies that identify and remove new contaminants from water supplies.
- Identifying treatment technologies that are cost and energy-efficient.
- Educating youth on water issues and future water needs.

[4] George Tchobanoglous, P.E. – Professor Emeritus, Civil and Environmental Engineering, UC Davis. Specialty in wastewater treatment and reuse. Authored and co-authored over 300 technical publications, including 12 textbooks used in over 200 colleges and universities.

[5] Larry Raio – Currently teaches at Cal Poly, Architectural Engineering Department, Earth and Soil Science Department (5 years); worked with Earth Systems Consultants for 22 years as Lab Manager, Staff Engineer and Drill Rig Operator; drilled hundreds of borings in Los Osos for groundwater depth (piezometers) and percolation tests; helped design over 100 on-site sewage disposal systems throughout the county, and many in Los Osos; personally drilled borings and installed monitoring wells for Brown and Caldwell Study in 1983 for Los Osos as a contract driller. Education: B.S. in Natural Resources Management, and M.S. in Soil Science, both from Cal Poly, San Luis Obispo.

[6] Thomas Ruehr, Ph.D., Professor Emeritus, Soil Science, Cal Poly, San Luis Obispo

# DRAINAGE AND SURFACE WATER QUALITY
## DEIR Section 5.3 and Appendix E

SUMMARY

We strongly recommend that the county's project consider storm water as a resource, and request that they analyze alternative methods of controlling and utilizing drainage and runoff.

We request that an analysis of the threshold of significance be conducted for Broderson.

DISCUSSION

According to the DEIR Section 5.3, sources of recharge to upper aquifer (Zone C) include: rainwater percolation and irrigation (~1490 AFY), septic return flows (~631 AFY), and leakage through perched layer (!375 AFY), subsurface inflow from Zones A, B, creek, and underlying bedrock (~625 AFY). Sources of estimated recharge to lower zones include: leakage from upper zones (~880 AFY), Creek Compartment (~370 AFY), and Seawater Intrusion (~470 AFY).

The DEIR further states that, due to development and higher groundwater levels, the capacity of natural sumps (sandy pits with no outlet) has been reduced, thus contributing to localized flooding. In response to this, the DEIR recommends that a community drainage system be constructed, including curbs, gutters, pavement, and storm drains.

Wouldn't this simply capture runoff and send it somewhere else (e.g. the WW treatment plant)? .. rather than providing the opportunity for it to recharge the upper aquifer via percolation? This would appear to rob the aquifer of approximately half of the 1490 AFY attributable to rainwater percolation and irrigation in the populated area, i.e., 750 AFY. Moreover, it would the same amount of load to the treatment plant.

Based on information from the Water Institute*, we recommend that the county's project consider storm water as a resource, and analyze alternative methods of controlling and utilizing drainage and runoff. This approach is based on the four R's of conservation hydrology: **Receive, Recharge, Retain, and Release**.

a. "Receive: We must implement and enforce land use patterns that enhance the receptive capacity of our watersheds."

b. "Recharge: Recharge potential and functions are impaired by the hardening and paving over of natural recharge areas. To increase recharge we must limit impervious surfaces and the wholesale conversion of native vegetation. We must implement stormwater techniques designed to slow it, spread it, and sink it as a deposit into the Earth."

c. "Retain: The retention of recharged precipitation is an asset. Conservation Hydrology strategies should appropriately slow water down, increasing the residence time of water storage in our watersheds."

*Brock Dolman, The Occidental Arts and Ecology Center, a nonprofit education center in Northern California, established the Water Institute to research, educate, and train people on how to holistically manage a watershed.

d. “Release: Human development practices (creating impervious surfaces, channelizing stormwater, etc.) tend to increase the rate and volume of stormwater’s return to the ocean via excessive runoff and heightened flood discharges. This directly reduces the landscape’s ability to retain water and diminishes the amount of water available for later release during the dry season.

2. Thresholds of Significance: The DEIR in section 5.3.3 addresses only the proposed treatment plant sites and stream crossings; it does *not* address Broderson. We request that an analysis of the threshold of significance be conducted for Broderson.

QUESTIONS/ COMMENTS TO BE ADDRESSED:

1. We question the DEIR’s recommendation that a community drainage system be constructed, including curbs, gutters, pavement, and storm drains. It appears that this would simply capture runoff and send it somewhere else (e.g. the WW treatment plant, adding to its load). And the basin would be robbed of approximately 750AFY of recharge. Please explain reasons for the DEIR’s recommendation.

2. We ask that the county analyze alternative methods of controlling and utilizing drainage and runoff, based on the four R’s of conservation hydrology: Receive, Recharge, Retain, and Release.

3. We request that an analysis of the threshold of significance be conducted for Broderson.

# GEOLOGY
## DEIR Section 5.4 and Appendix F

SUMMARY

Based on the following geological analysis by experts, the key concerns raised in the Geology section of the DEIR include:

- There are scientific reasons to question the ability of Broderson leach fields to recharge the upper and lower aquifer as projected.
- There is a high potential for water to daylight out the slope if there is water pressure from above and it can't move vertically fast enough, resulting in pollution of the wetlands and bay.
- There is a serious risk of liquefaction and landslide at Broderson and the housing tract below.

DISCUSSION

The following report was submitted by Larry Raio.[1]

**A. Groundwater Conditions**

The DEIR states: *"Groundwater depths range from approximately near or at the ground surface to greater than 80 feet below the existing ground surface west of Los Osos Creek. … The potential exists for groundwater to be encountered at different depths at other locations and times, above impermeable layers, and within fractures or discontinuities within the bedrock (if encountered). Groundwater and soil moisture conditions fluctuate seasonally, and because of changes in precipitation, storm runoff, irrigation schedules, and other factors."*

1. **The statements given describing the groundwater conditions are very general and do not adequately characterize the complicated and quite variable system that it is.** There are numerous perched water tables located throughout the stabilized sand dunes areas of Los Osos. These "perched" water tables in the stabilized sand dunes have edges; the water flows to the edge and travels down to the next one. So there is both vertical and horizontal movement of water through these lenses.

These clay lenses were formed in the low lying areas in the middle of the sand dunes when there was no where else for the water to go. The fines in the sand would be washed to the bottom of the dune during rains and form a clay or silt lense called lamellae. But the layer is limited in size and has edges. I have drilled hundreds of borings and placed piezometers (perforated pipes installed in borings for measuring depth to groundwater) and have found that the depth to groundwater is quite variable and difficult to predict. I drilled one lot where there was high water at the front of the lot (8-feet) but could not find any on the back of the lot (deeper than 25-feet), and the lot was relatively level.

When the dunes would shift during the heavy and constant winds (think of Oceano Dunes) these lenses would be covered. Even a 1/8-inch layer of silt will hold water. Now there could be many thin layers on top of each other with wind blown sand between them. And these layers aren't as solid as you might think. After it rains, the silt layer will dry out and start cracking, and the edges will curl up. You have probably seen this in other low

[1] Larry Raio – Currently teaches at Cal Poly, Architectural Engineering Department, Earth and Soil Science Department (5 years); worked with Earth Systems Consultants for 22 years as Lab Manager, Staff Engineer and Drill Rig Operator; drilled hundreds of borings in Los Osos for groundwater depth (piezometers) and percolation tests; helped design over 100 on-site sewage disposal systems throughout the county, and many in Los Osos; personally drilled borings and installed monitoring wells for Brown and Caldwell Study in 1983 for Los Osos as a contract driller. Education: B.S. in Natural Resources Management, and M.S. in Soil Science, both from Cal Poly, San Luis Obispo.

lying areas like after a pond dries up. So if you have many of these types of layers on top of each other, all of them with some windblown sand between them, they will hold water but not indefinitely. They really just slow the water down to a trickle.

That's why the water tables fluctuate so much in Los Osos; because the water is percolating slowly through these lenses. During the summer the water table lowers, and during the rainy season, they rise. But they only rise so much because of the edges. It would be like drilling microscopic holes in the bottom of a pot and putting the pot under the faucet and turning the water on slowly; the pot would eventually fill up and start flowing over the edge, so the water level would only rise to a certain level. Turn off the water, and the water would slowly drain but it may not empty before the water is turned on again.

It was in some of these perched water tables that had test wells placed in for the Brown & Caldwell study. The problem is that these perched waters are so variable and abundant, that there has not been an adequate study done to date to properly characterize this shallow underground water system. We also don't know changes in groundwater levels during the winter vs. the summer and during wet seasons vs. dry seasons.

The overall direction of the water flow through the lamella under ***normal*** conditions is going to be vertical. The water flow is still going to be downward but it's going to be much slower than the >5 minutes per inch that the infiltration trenches are designed for. As the water flows downward and it contacts the lamella, it will flow laterally until it hits an edge, and then it will flow down again. The vertical movement will be much slower than the rates used in the design of the percolation trenches at Broderson. There is a high potential for water to daylight out the slope if there is water pressure from above and it can't move vertically fast enough. It will find the path of least resistance, and it will flow laterally. These lamellae will also interrupt the head pressure in the column of water that is supposedly going the recharge the lower aquifer. For the water to travel 100 vertical feet, it may have actually traveled 1000 lineal feet once it has traveled around all the lamellae. This enhances the filtration properties of the Baywood soils as Dr. Tom Ruehr mentions at the end of his statement.

The DEIR states: *Seismic Ground Shaking, 5.4-B:* ***The project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a strong seismic ground shaking.***
*Proposed Project 1*
*Collection System*
*Liquefaction can result in ground mobility that impacts pipeline grades, or results in* ***pipelines floating*** *out of the ground in areas of liquefaction. The collection system under Proposed Project 1 would consist of approximately 45 miles of pipeline that will essentially be constructed through the Los Osos Community. Loose sand blankets are found at the upper five to ten feet of the ground surface over most of the collection system area. Portions of the collection system network traverse areas having a relatively high potential for liquefaction. The potential for liquefaction and seismic settlement to impact pipelines may be governed by the depth of the pipeline relative to the depth of liquefiable soils. The proposed collection system for Proposed Project 1 may experience significant liquefaction impacts. Furthermore, this potential significant impact could result in pipeline breaks and release of untreated and/or treated effluent along the proposed collection/ conveyance system, including within Los Osos Creek and Warden Creek. Thus even in the event the near surface loose dune sand were saturated due to precipitation or effluent disposal at the time of an earthquake, the groundwater depths would not rise near the ground surface at the site. Therefore, the proposed facilities at Broderson would not change the potential for liquefaction or seismic settlement to occur within the soils because of the effluent disposal system and estimated mounding at the Broderson site.considerable and, therefore, significant for Proposed Projects 1 through 4.*
***Mitigation Measures***
***Project-Specific***

*In addition to the implementation of Mitigation Measure 5.7-B.1 to reduce impacts from accidental spills due to seismic conditions, the following mitigation measures shall be implemented.*
*Proposed Projects 1 through 4,* 5.4-C1 "*Prior to approval of the improvement plans for the proposed facilities that are part of the collection system and at the treatment plant site, a geotechnical report that addresses liquefaction hazards shall be prepared and approved by the County of San Luis Obispo. The geotechnical report shall state the recommended actions for the collection system and treatment plant site so that potential impacts from seismically induced liquefaction would be reduced to less than significant."*

**How can the county be sure that a geotechnical report will conclude that the potential impacts from liquefaction can be reduced to less than significant? And if they can be reduced to less than significant, what will be the cost of such mitigating measures be?** It could more than double the cost of the collection system, or more, since the entire project is located in areas of very high potential with some areas of moderate potential. How can an informed decision be made without this information? **It is clear that this study must be made prior to this project moving forward.**

From CEQA Article 7, Section 15086 (d) of the Public Resources Code, it is also clear that CEQA does not allow the promise of a report that will reduce to the potential impact to replace an actual study that states how the potential impact will be reduced to less than significant and what the associated costs may be for those mitigating measures (if there are any to begin with).

Liquefaction has been clearly identified to have significant environmental effects. Detailed performance objectives for mitigation measures addressing those effects must be readily available along with guidelines or reference documents concerning mitigation measures. This is clearly not available. To state that the level of significance after mitigation is less than significant with out any proposed measures, reference documents, and guidelines but only on the promise of a study is negligent.

**It is also clear from numerous studies that large gravity collection system pipes are the most susceptible to settlement from liquefaction and/or rupture resulting in loss of serviceability.**

In Section *5.4-C2*, the DEIR states: **"***Prior to approval of improvement plans, an Emergency Response Plan (ERP) shall be prepared as part of the operation and maintenance plan for the proposed collection system. The ERP shall recognize the potential for liquefaction, seismic hazards and ground lurching, to impact the pipeline or other proposed facilities, and specific high hazard areas shall be inspected for damage following an earthquake. "Soft Fixes" shall be incorporated in the ERP. Soft fixes typically consist of having a plan in-place to address the hazards, such as can be achieved by storing supplies and equipment for repair.*

And, 5.4-F1: *Prior to approval of the improvement plans for the proposed facilities, a geotechnical report that addresses the potential for lateral spreading, ground subsidence, and ground lurching and provides measures to reduce potential impacts to less than significant shall be prepared and approved by the County of San Luis Obispo.*

Again, the promise of a report does not replace the need for the required mitigation information. Expansive soils have been clearly identified to have significant environmental effects. Detailed performance objectives for mitigation measures addressing those effects must be readily available along with guidelines or reference documents concerning mitigation measures. This is clearly not available. To state that the level of significance after mitigation is less than significant without any proposed measures, reference documents, and guidelines but only on the promise of a study is negligent. The costs for mitigation measures need to be known before approval of any of the proposed projects.

**We request that the county and its consultants conduct a (new) scientific study to characterize the shallow underground water system, particularly at Broderson and down slope, to determine the extent of recharge possible.**

2. **Water permeability problems in Baywood fine sand**[2] : The windblown sand associated with most of the Los Osos community is mapped as Baywood fine sand. The Natural Resource Conservation Service (accessed at http://soils.usda.gov/) describes this soil with the following properties: "Some pedons also have a few faint lamellae or a few small dark reddish brown concretions."

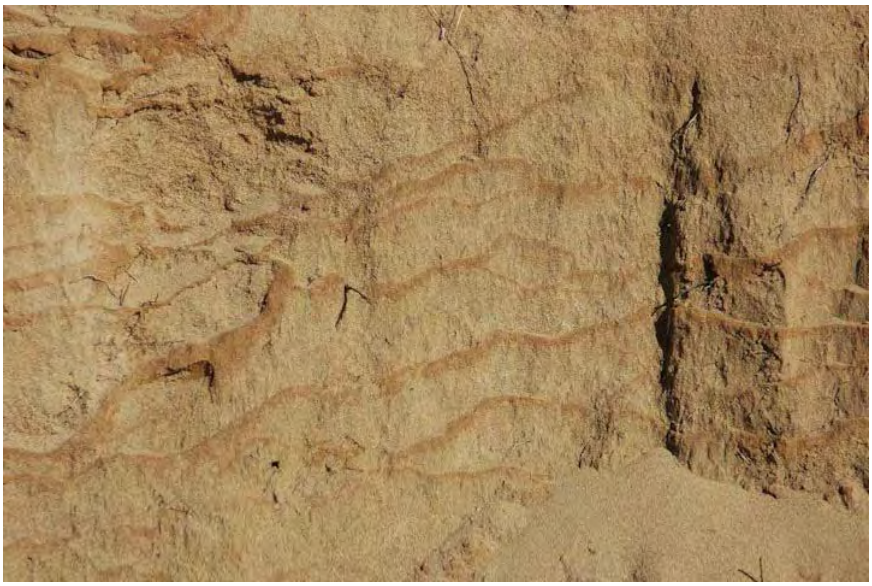
**The fine lamellae occur about every 2 to 4 inches**. They are roughly parallel to the land surface. Although the total number has never been counted, hundreds to thousands exist with depth below the land surface. Each layer is finer than a pencil consisting of an accumulation of clay (5 to 7 % within the lamellae) and a coating of iron oxides both above and below each layer. The clays and iron oxides have partially filled the soil pores. The iron oxides have provided a weak cementing action allowing these lamellae to persist over time.

Because some of the soil pores are partially filled with clay and iron oxides, the ability of these pores to transmit water directly downward (vertically) is impaired. Each time a film of water contacts one of these lamellae, the water temporarily ponds on top of this layer. Under the influence of gravity, the temporarily ponded water moves laterally (sideways) down hill. Eventually the water will slowly move through this lamellae layer until it encounters the next layer. The same process is repeated at each layer.

The overall effect of these numerous parallel lamellae is to slow vertical water movement forcing more of the water to move downward in a stair step fashion with considerable lateral movement of water. This problem creates difficulties when trying to predict the rate of water permeability in these soils. Disturbed samples will have high water infiltration rates vertically because the lamellae have been mixed, but non-disturbed samples will have slower vertical flow with considerable lateral redistribution of water from the site of water application.

Water permeability rates for many of the soil sites in the Los Osos area underlain by the wind blown sands are overly exaggerated because this phenomenon has been ignored by most scientists. The lamellae enhance the filtration process because the water flow is impeded and more effective blocking of particles (clay, bacteria, viruses) occurs in the water flow path.

[2] Thomas Ruehr, Ph.D., Professor of Soil Science at Cal Poly, San Luis Obispo



**Baywood Fine Sands — Lamella Formation**
**As demonstrated by Dr. Thomas A. Ruehr**

The above photo from Dr. Tom Ruehr Ph.D., Professor of Soil Science at Cal Poly, is clear evidence of these fine lenses that hold or transport water laterally below grade. The 400,000 GDP discharge planned at Broderson will likely move laterally down slope, rather than vertically. Hence, the hope of creating a pressure gradient strong enough to force reversal of seawater intrusion in the lower aquifer will not be realized. On the contrary the most probable destination of these waters will be the brackish wetlands around the Morro Bay shoreline contaminants will interfere with the reproductive cycles of the biological life in Morro Bay, including Steelhead, which have historically spawned in the bay. Studies by MBNEP have shown alarming damage to species of fish in the MB.

**How will the county's project minimize the risk of lateral movement of discharge at Broderson, resulting in pollution of the bay and its wetlands with emerging contaminants?**

3. An unintended consequence of this disposal approach will cause the liquefaction of the fine blown sand underlying the Broderson discharge site and the Redfield Woods development below. The very real potential for this problem is evidenced by the occurrences in 1979 and again in the mid-1980's, documented and pictured in local newspapers. **How will the county's project ensure that the risk of liquefaction and landslide are mitigated?**

4. The October 17, 1989 Loma Prieta earthquake was responsible for 62 deaths and 3,757 injuries. In addition, over $6 billion in damage was reported including damage to 18,306 houses and 2,575 businesses. Approximately 12,053 persons were displaced. The most intense damage was confined to areas where buildings and other structures where situated on top of loosely consolidated, water saturated soils. Loosely consolidated soils tend to amplify shaking and increase structural damage. Water saturated soils compound the problem due to their susceptibility to liquefaction and corresponding loss of bearing strength. See www.es.ucsc.edu/~es10/fieldtripEarthQ/Damage1.html

It appears that the DEIR assumes that STEP has a greater risk associated with seismic activity. However, the 1994 Northridge earthquake is well documented for damage to gravity pipes (14 years and $2 billion to repair), but pressurized water pipes were much easier and quicker to repair, and over 60 of water was restored within 24

hours. Likewise, Morro Bay gravity collection pipes were so damaged in the Dec 22, 2003 earthquake that FEMA grants were awarded.

The DEIR states in Section 5.4.5 - Level of Significance Prior to Mitigation:
*Less Than Significant or No Impacts were found related to the project being susceptible to fault rupture and landslides. These issues will not be discussed further.*

- In light of existing evidence that Los Osos has a 7.5 Hosgri fault 10 miles offshore 7 magnitudes higher than the San Simeon 2003 quake, this appears to be an unscientific assumption. **A complete analysis is needed of the lamellae lenses and their impact on percolation rates, liquefaction, and landslide.**
- The gravity trenching will cut through the clay lenses causing the waters to run down the trenches to the bay. A matrix of 8 foot deep trenches will make a creek that will drain these perched water bowls (clay lenses) out to the bay where we will lose large amounts of water. When a quake occurs, the wet soils in the trenches will consolidate and the engineered slope of the beds will be lost (as described by Brandman). **The gravity sewer will cease to function as designed, and Los Osos will be without sanitary services and at risk of cholera and other contagious diseases. How will services be provided? At what cost? Please detail the recovery plan as case law has adjudicated.**

***Proposed Projects 1 Through 4***
**The DEIR's finding of "Less than significant" is inadequate, in that mitigations are called for but not detailed. The plan must be available to be evaluated.**

SUMMARY OF QUESTIONS AND COMMENTS TO BE ADDRESSED

1. **We request that the county and its consultants conduct a (new) scientific study to characterize the shallow underground water system, particularly at Broderson and down slope, to determine the extent of recharge possible.** It was in some of the perched water tables that had test wells placed in for the Brown & Caldwell study. The problem is that these perched waters are so variable and abundant, that there has not been an adequate study done to date to properly characterize this shallow underground water system. We also don't know changes in groundwater levels during the winter vs. the summer and during wet seasons vs. dry seasons.

2. **How can the county be sure that a geotechnical report will conclude that the potential impacts from liquefaction can be reduced to less than significant? And if they can be reduced to less than significant, what will be the cost of such mitigating measures be?** It could more than double the cost of the collection system or more sense the entire project is located in areas of very high potential with some areas of moderate potential. **How can an informed decision be made without this information? It is clear that this study must be made prior to this project moving forward.**

3. Ground lurching has been clearly identified to have significant environmental effects. Detailed mitigation measures must be available and the costs for mitigation measures need to be known before approval of any of the proposed projects. **In the event of a 6.8 to 7.5 magnitude earthquake how will the damage be repaired? Who will be liable for the cost of repairs?**

4. It is also clear from numerous studies that large gravity collection system pipes are the most susceptible to settlement from liquefaction and/or rupture resulting in loss of serviceability. The gravity sewer will cease to function as designed, and Los Osos will be without sanitary services and at risk of cholera and other contagious diseases. **How will services be provided? At what cost? Please detail the recovery plan as case law has adjudicated.**

5. There is a high potential for water to daylight out the slope if there is water pressure from above and it can't move vertically fast enough. **How will the county's project minimize the risk of lateral movement of discharge at Broderson, resulting in pollution of the bay and its wetlands with emerging contaminants?**

6**.** The DEIR's finding of "Less than significant" is inadequate, in that mitigations are called for but not detailed. **The mitigation plan must be available to be evaluated.**
7. South Bay Fire Department and equipment is housed at Highland Ave in the planned effluent mound area. **How will needed services be provided and restored as the demands increase sharply from life threatening injuries normally occurring in the course of a seismic event, as gas, water and sewer mains will be damaged and loss of power is likely?**

# BIOLOGICAL RESOURCES
## Section 5.05 and Appendix G

SUMMARY

All four projects would have potentially significant, cumulative effects on biological resources. We have concern about the future status of existing wetlands in the project area – with the loss of septic tank leachfields in the Prohibition Zone. The emphasis should be on eliminating impacts, rather than simply mitigating them.

**We request a response to the following questions:**

- What is the impact of this loss of leachfields to existing wetlands, including loss of habitat?
- Where is the source data for this information?
- If wetlands loss occurs, how will it be dealt with? Please supply details of mitigation monitoring if it is necessary. .

DISCUSSION

Mitigation strategies are necessarily tentative because much of the potential effects are unknown until a project is decided upon and work actually begins. As far as we can tell, there will be extensive consultation with agencies such as the California Department of Fish and Game, US Fish and Wildlife Service, and credentialed biologists both before any project component begins and whenever the possibility of adverse effects occurs.

Workers will be educated about general detection and avoidance of sensitive resources by a USFWS approved biologist. Such approved biologists will also monitor construction in habitats of the named species of concern. This monitoring will be on a daily basis until the initial disturbance of any habitat is completed. When appropriate, individuals of the species of concern will be relocated.

The mitigation measures as described appear to be based on appropriate data and thorough.

ISSUES /ERRORS/OR OMISSIONS

**The wetlands concern discussed in the summary is our only issue.**

# CULTURAL RESOURCES
## DEIR Section 5.6 and Appendix H

SUMMARY

The DEIR states that the collection system would disturb human remains within the identified sensitive areas of the community of Los Osos. Human remains have been identified during data recovery excavations undertaken for the previously proposed wastewater project. There is a general assumption that STEP/STEG has a larger cultural footprint because of replacement of septic tanks, though there is no detail about how many tanks would be replacements vs. new. There is no differentiation between the piping size and depth of the two collection systems. There is an assumption that 6-28 ft deep Gravity trenching in the middle of paved roadways will not affect cultural discovery. The installation differences between directionally bored, smaller, more flexible, shallow STEP/STEG collection pipes and the Gravity plan have not had a reasonable comparison because that data is either not considered, is contradicted or is simply deleted.

There is much discussion in the Executive summary about a wide variety of mitigation measures that will apply to the project and likely add expense and delay. There is no analysis of the potential costs of any mitigation impact should cultural sites be disturbed. The potential high chance for this at every stage of the project would ask for a better evaluation of the two collection systems.

The DEIR does not take into consideration the historical significance of the Tonini farm and buildings and states that there is no mitigation required. This was an early 1900's dairy farm with two homes and 9 outbuildings that may be over 100 yrs old. There are conflicting statements on the cultural, agricultural, and historical status of the Tonini site.

DISCUSSION

1. **STEP Cultural Impact is NOT the same as Gravity (Collection).**

Table 5.6-2 (page 29) notes that the collection area of archaelogical sites impact is the same for all 4 projects. This assumes that both STEP and Gravity use the same amount of trenching and lift stations. This is incorrect and runs throughout this Appendix. Clearly the analysis of cultural impacts is inadequate by lumping directionally- bored collection technology with Gravity trenching. To assume that no cultural activity may occur under the 42 miles of roadway, once they are trenched, fails to address the square miles of deep trenching necessitated by the Gravity collection (42 miles X 20 ft wide street areas). To assume that new installation of septic tanks and their pressurized shallow laterals is significantly higher than what the deep lateral trenches will be for Gravity is not addressed either.

**Request further clarification and source data concerning the difference between the disturbance impact of a STEP vs. gravity collection in the LOWWP: i.e. STEP – replacement of septic tank to the front yard of the residence with shallow trenching and small pipes as compared with Gravity with its deep trenching and large pipes.**

2. **Tonini site may be considered to be of historical significance**.

It would be prudent to determine if the Tonini site now has new historical standing having just been entered into a newly designated scenic mountain range and along a scenic roadway. There is also discussion of the crops currently being grown at Tonini, as it is a fully operating agricultural business on prime agricultural land.

# PUBLIC HEALTH AND SAFETY
## DEIR Section 5.7 and Appendix I

SUMMARY

Issues of concern that are not adequately addressed in the DEIR include:

1. Anticipation of upgraded health standards for any re-use of effluent discharge, which would require tertiary treated water
2. Discussion of earthquake potential, impact and repair
3. Mitigation for potential trench wall and roadway collapse
4. Discussion of prevention measures for overflow/spill of contaminated raw sewage

DISCUSSION

1. **Anticipation of upgraded health standard regulations for treated/recycled water**:

- Emerging contaminants present in some food sources and virtually all natural water sources have been identified as a primary causative factor in many biologic and developmental functions.
- A convergence of environmental factors is forcing a re-evaluation of toxic pollutants and will, without doubt, result in significantly more stringent environmental regulations by DHS and EPA.
- Many toxic contaminants can be almost completely removed from water, but requires intensive multi barrier treatment. Some cannot. In order to preserve an adequate future potable water supply it will become necessary to apply a best means approach.
- Projects 1,2,3,4 do not require effluent treatment beyond secondary treatment

There are strong indications from EPA and DHS (California Department of Health Services) that regulations for water and, most particularly, recycled water will be aggressively expanded as emerging contaminants continue to be studied. With increased public awareness of food, air and water borne health threats in the form of pollutants, evolving virus/bacteria, and unmonitored production practices, selling recycled water to an alert, wary public will become increasingly difficult and will only be accomplished by establishing confidence in regulatory agency diligence. There is much evidence and extrapolation from evidence that emerging contaminants are having a serious, detrimental impact on human and wildlife health, particularly to the endocrine and reproductive systems. It is now understood that hormone mimicking drugs and other chemicals have a bio-cumulative effect and are readily detectable in breast milk. It is also common knowledge that the two main categories of chemicals, mutagens and carcinogens, are creating health and developmental problems in children and wildlife. Young girls are experiencing early endocrine system activation, resulting in very early maturation, while boys are also undergoing discernable physical changes. The incidence of uterine and breast cancers are now common in increasingly younger women and have been linked to hormone-mimicking substances in food and water. Frogs and other aquatic life have lower sperm counts and are producing malformed offspring. Because water is consumed in larger quantities than other foods, it is believed that water quality has the most significant impact. As technology in detecting, identifying and treating for these emerging contaminants continues to advance, it is anticipated that regulations will become increasingly stricter in both contaminant and allowable levels.

2. **There is discussion posing future reuse/recharge in ag exchange yet the DEIR contains no discussion about treatment and infrastructure requirements.**

Wastewater must be treated to specific standards for direct use on edible crops. New draft regulations setting new guidelines for disposal quality water (level of treatment required before water can be discharged to a disposal site) can be seen in Title 22, Groundwater Recharge Reuse DRAFT Regulation, August 5, 2008 (pg.20-

22) which states proposed regulations for the use of RO for TOC's (total organic compounds). The DEIR refers to Broderson as a recharge site for the upper aquifier: Current IPR (indirect potable reuse) regulations indicate that water pumped to Broderson would require at least tertiary level treated water if soil characteristics, hydrology, distance to withdrawal, etc. prove to be inadequate to remove all contaminants to the appropriate level. However, indications are that IPR water will require advanced treatment systems with multi-barrier safeguards in the not too distant future. There is clearly a movement toward the use of advanced treatment systems including reverse osmosis, UV and various levels of sophisticated filtration systems

A serious potential health risk, rarely discussed, exists as a result of open bodies of water such as ponds (as opposed to wells) exposed to tritium as a result of the proximity of Los Osos to Diablo Nuclear Power Plant. There is no known system to remove tritium because it is actually a water molecule, but testing for this and other 'at risk' contaminants should be mandatory. There are many sites explaining tritium, but the Greenpeace website, www.greenpeace.org, explains it more efficiently and economically of space than others. Other references for tritium and endocrine disruptors include:

> *Evidence suggests that environmental exposure to some anthropogenic chemicals may result in disruption of endocrine systems in human and wildlife populations. A number of the classes of chemicals suspected of causing endocrine disruption fall within the purview of the U.S. Environmental Protection Agency's mandates to protect both public health and the environment. Although there is a wealth of information regarding endocrine disruptors, many critical scientific uncertainties still remain. Research includes determining what effects are occurring in human and wildlife populations, the chemical classes of greatest concern, the ambient levels of exposure, and how unreasonable risks can be mitigated.*
> EPA: Encocrine Disruptors Research Initiative http://www.epa.gov/edrlupvx/
>
> *The USGS has a major interest in collaborating with other agencies to inform the public and Congress of the issue of endocrine disruption. Over the last 10 years, the USGS has developed research and monitoring programs on the biological response to endocrine disrupting chemicals (EDC's) in the nation's waterways and has identified priorities and opportunities for collaboration with other federal agencies.*
> Sue Haseltine, Associate Director for Biology,
> USGS://es.epa.gov/ncer/publications/workshop/cenr_2202007.pdf
>
> *There's no doubt about it, pharmaceuticals are being detected in the environment and there is genuine concern that these compounds, in the small concentrations that they're at, could be causing impacts to human health or to aquatic organisms …*
>
> *Recent laboratory research has found that small amounts of medication have affected human embryonic kidney cells, human blood cells and human breast cancer cells. The cancer cells proliferated too quickly; the kidney cells grew too slowly, and the blood cells showed biological activity associated with inflammation…*
>
> *There's growing concern in the scientific community, meanwhile, that certain drugs – or combinations of drugs- may harm humans over decades because water, unlike most specific foods, is consumed in sizable amounts every day …*
> Huffington Post, March 10,2008: Sex Hormones, Mood Stabilizers Found in Drinking Water of 41 Million Americans quotes Mary Buzy, Director of Environmental Technology for drug maker, Merck & Co. (pg.3)

3. **The DEIR contemplates only secondary treatment of effluent.**

As the Sierra Club has pointed out, "The evolution of state and federal standards for wastewater treatment has been heading in only one direction – up – and it is likely that tertiary treatment will be required by law by the time the Los Osos wastewater treatment project is completed. Morro Bay and Cayucos, with significant encouragement from the environmental community, saw that writing on the wall when they decided to upgrade their wastewater treatment plant to bring it into compliance with the Clean Water Act, and went beyond the current minimum of secondary treatment, mandating a tertiary component." Santa Lucian, vol. 46, No.1, January, 2009.

4. **Discussion of earthquake and soil saturation potential, impact and repair**:
   - Contamination of ground water from raw sewage release during an earthquake creating a public health risk
   - Pipeline joint separation during seismic settlement causing extensive repair and repetition of all construction health and safety issues
   - Liquefaction and earth slide during an earthquake creating a public safety risk
   - The **Broderson** area is subject to earth slides from heavy soil saturation

Ground lurching during an earthquake will cause gravity system piping to disconnect at joints, causing pipes to break releasing raw sewage into ground water thereby establishing a potential health safety risk. The issue of raw wastewater spills at pump stations, disposal sites and in waterways is mitigated under DEIR 5.7.B.1, pg. 5.7-21; however there is no discussion of groundwater contamination from raw wastewater as a result of seismic activity during an earthquake which would become a significant impact on public health and safety. Large gravity pipes are subject to upheaval, breakage and leakage. This is particularly true at the point of joint coupling, where, because of unsealed jointing, leakage is common.

Earthquakes initiate land slides and create areas of liquefaction in wet soils both of which have the potential for severe impact on gravity piping stability. The Central Coast is listed as a significantly active earthquake area and USGS maps indicate frequent seismic activity in the area. In addition, heavy soil saturation from heavy rains or disposal overload may result in earth slides into adjacent neighborhoods as evidenced by events in 1979 and mid 1980's in which homes on Highland Ave. were flooded with earth and water. Soil and water experts disagree about Broderson's ability to absorb and hold the amount of water slated for disposal there – estimated to be 400,000 g/d in the dry season and 800,000 g/d during the rain season. Wet season disposal will be anticipated to be compounded by additional rains and rain runoff from higher elevations above the Broderson site.

A statement from Larry Riao, Earth Systems and soil studies, Cal Poly, SLO:

> *The statements given describing the groundwater conditions are very general and do not adequately characterize the complicated and quite variable system that it is. There are numerous perched water tables located throughout the stabilized sand dunes areas of Los Osos. These "perched" water tables in the stabilized sand dunes have edges; the water flows to the edge and travels down to the next one. So there is both vertical and horizontal movement of water through these lenses. These clay lenses were formed in the low lying areas in the middle of the sand dunes when there was no where else for the water to go. The fines in the sand would be washed to the bottom of the dune during rains and form a clay or silt lense. But the layer is limited in size; it has edges. I have drilled hundreds of borings and placed piezometers (perforated pipes installed in borings for measuring depth to groundwater) and have found that the depth to groundwater is quite variable and difficult to predict. I drilled one lot where there was high water at the front of the lot (8-feet) but could not find any on the back of the lot (deeper than 25-feet), and the lot was relatively level. When the dunes would shift during the heavy and constant winds (think of Oceano Dunes) these lenses would be covered. Even an 1/8-inch layer of silt will hold water. Now there could be many thin layers on top of each other with wind blown sand between them.*

*And these layers aren't as solid as you might think. After it rains, the silt layer will dry out and start cracking, and the edges will curl up. You have probably seen this in other low lying areas like after a pond dries up. So if you have many of these types of layers on top of each other, all of them with some wind blown sand between them, they will hold water but not indefinitely. They really just slow the water down to a trickle. That's why the water tables fluctuate so much in Los Osos, because the water is percolating slowly through these lenses. During the summer the water table lowers, and during the rainy season, they rise. But they only raise so much because of the edges. It would be like drilling microscopic holes in the bottom of a pot and putting the pot under the faucet and turning the water on slowly, the pot would eventually fill up and start flowing over the edge, so the water level would only rise to a certain level. Turn off the water, and the water would slowly drain but it may not empty before the water is turned on again.*

*It was in some of these perched water tables that had test wells placed in for the Brown & Caldwell study. The problem is, that these perched waters are so variable and abundant, that there has not been a adequate study done to date to properly characterize this shallow underground water system. We also don't know changes in groundwater levels during the winter vs. the summer and during wet seasons vs. dry seasons*.

Fugro Report, March 9, 2004 addresses the issue of earthquakes, liquefaction and seismic settlement at length:

5. **Mitigation for potential trench wall and roadway collapse**:

- Applies to construction personnel, but may also impact the public

It's understood that risk to construction personnel is usually the responsibility of the employer/contractor, but as with any construction activity in a populated area (such as residential streets), involving heavy equipment, deep trench excavation, and potential flooding, there must be public safety consideration in place. The incidence and safety risk of trench wall cave-in, even in relatively shallow trenching, especially in sandy soil conditions is well understood. A quick Google search indicates it is a major concern in pipeline construction – it is in fact, one of the top four OSHA safety risks. To be considered are trenching width and risk of adjacent roadway collapse especially as it affects people moving in and out of their homes during construction.

*The potential for caving in the dune sand will generally increase with depth, and length of the trench. It is our opinion that there is a potential for sloughing and caving of the trench sidewalls. Limiting the length of trench or installing temporary trench supports can be used to reduce the potential for caving. Trench shields or jackets shoring with plywood sheeting can be installed to support the trench walls during the placement of the gravel and pipe.* Fugro West Geotechnical Report, Los Osos Wastewater Project, March 9, 2004 (6.7.1.2 pg.6-43)

*Relatively deep trenching will be needed to construct the sewer collection system pipeline. Even moderate caving in deep trenches can result in cracking of adjacent pavement to several feet or more beyond the sawcut line. Trench walls lacking adequate support could experience trench wall instability or movements that could damage adjacent pavements, utilities, or structures*. Fugro West Geotechnical Report, Los Osos Wastewater Project, March 9, 2004 (6.1, pg.6-1)

A recent New Times article titled "Trench Deaths" about an industrial accident involving pipeline construction states: "(Paul) Satti, (Technical Director) of the council (Construction Safety Council) explained that trenches and other excavation accidents are among the top four Occupational Safety and Health Administration concerns..." (New Times, Vol.24, No.25, January 15-22, 2009, pg.11

6. **Discussion of prevention measures for overflow/spill of contaminated raw sewage**:

The issue of raw wastewater spills at pump stations, disposal sites and in waterways is mitigated under DEIR 5.7.B.1, pg. 5.7-21by the use of containment and other measures, however there is no discussion of prevention protocols for overflow, spill and leakage of raw wastewater. Power outages and heavy storm overload can cause backup, overflow, spills and leakage at pump stations and manholes releasing sewage onto surface areas where it becomes a public health risk. In all matters, involving measurable risk, it is in the interest of all concerned to employ the precautionary principle. To that end, adequate storage capacity, back-up generators and routine maintenance measures would potentially prevent the mentioned health risks as well as clean-up costs, hazardous disposal and RWQCB fines.

> "The panel also concurs…the collection system for the Los Osos Wastewater Project should: Provide the greatest possible protection against overflows and other releases of partially treated or untreated wastewater from the system, which could pollute Morro Bay and other sensitive coastal ecosystems."
> NWRI, Final Report, San Luis Obispo County Los Osos Wastewater Project, October 23, 2008
>
> "…fail-safe systems must be required, including back-up generators and sufficient storage capacity to deal with electrical outages and protracted storm conditions." Testimony of Ellen Stern Harris, Executive Director of the Fund of the Environment, Submitted for the 2/26/03 Public Workshop of the DWR/SWRCB/DHS 2002
> Recycled Water Task Force and The Environmental Justice Coalition for Water
>
> In a document titled: Regional Board Analysis Of Enforcement Criteria Established section d.6 of Order No. 2006-0003-DWQ, Item 16, Attachment 6. (December 12, 2007)
> The RWQCB ruled to prosecute the City of Oceanside for negligence for anticipating an illegal discharge due to pipeline failure citing, among other remedies, "Preventative maintenance (including cleaning and fats, oils and grease (FOG) control: Installation of adequate backup equipment: and Inflow and infiltration prevention and control to the extent practicable." (pg.3)
>
> In addition the City of North Bend, Final Comprehensive Sewer Plan, July 2001 recommends a root cutting program, grease trap inspection program, video inspection program to monitor the overall structural condition of the system, a lift station maintenance program and an inflow and infiltration analysis program to ensure that the necessary overloading of the wastewater treatment plant is avoided.

OTHER CONCERNS INCLUDE:

7. **Health impacts of total air pollution from diesel powered equipment and vehicles**:

Diesel exhaust emissions have serious health consequences, particularly among children, the elderly, those suffering from emphysema and asthma and other impaired respiratory systems.
In fact, chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in the U.S. Although mitigation for impaired air quality, specifically for NOx, which exceeds allowable thresholds during the construction phase for all four projects are listed in Air Quality, DEIR Section (5.9-27, 5.9-28) this information should be cross referenced with Public Health and Safety, Section I.

8. **Identification of alternatives to methanol**:

Methanol is added to wastewater to provide a carbon food source for the denitrifying bacteria which convert nitrates to nitrogen gas in sensitive aquifers. The EPA began a study of the carcinogenic effects of methanol in 2002 to be completed in 2010. Although an Italian study has identified methanol as a human carcinogen, more study will be necessary to be conclusive. (Canadian C+2 Petrochemical Report, Vol.25. Issue 2, Feb. 2008). Since methanol would be an ongoing issue with the Step treatment system and is listed as having a potential

significant health and safety impact, it appears it would be possible to mitigate for this risk by recalculating the greenhouse gas (GHG) impact from more recent data, by employing one of several alternatives to methanol or re-evaluating the necessity for methanol in Step effluent treatment. The Methanol Institute states "Through the implementation of efficiency improvements, and through replacing of older facilities with newer plants that use more efficient technologies, over the last decade methanol plants have been able to significantly reduce CO2 emissions by up to 40%: some facilities report emissions as low as 0.54 tonnes of CO2/tonne of methanol produced. This is equivalent to emitting 3.8 lbs. of CO2 per gallon of methanol."

Methanol is partly dependent on crude oil prices, and although petroleum prices have come down in the past few months, it is still a finite, politically driven commodity, subject to potentially volatile pricing. The study below lists high fructose corn syrup as the most cost effective alternative.

> "Methanol is commonly used as a substrate in teritary denitrification systems. The addition of methanol for denitrifiction is based on its biodegradability and availability, but methanol also has some disadvantages, including its potential for evaporative loss, a resulting danger of spark ignition, and the effect of evaporative losses on the surrounding air quality. These concerns have resulted in increasingly strict legislation in Southern California regarding the storage and use of methanol…An alternative substrate to methanol was sought for tertiary detrification. High fructose corn syrup (HFCS) was identified as the most cost effective alternative, which would also be much safer to handle. This should also render HFCS subject to less legislation at all levels of government." (pg. 3479)
>
> Water Environment Foundation, 2006: Give Your Denitrification Bugs a Sugar High, Coenraad Pretorius, Rudy Kilian, John Jannone
>
> Carollo Engineers, P.C., 10540 Talbert Avenue, Suite 200 East, Fountain Valley, CA 92708, USA, Eastern Municipal Water District, 2270 Trumble Road Perris, CA 92572-8300, USA

Another consideration is: "Facultative ponds will always require an add-on treatment process for denitrification, regardless of the wastewater collection method …STEP can also be fed into an oxidation ditch prior to an anoxic zone. STEP raw effluent does have carbon for denitrification and the quantity is constant. Additionally, if required, supplemental carbon source could be added at this point." (Mike Saunders, Orenco)

The methanol issue could be eliminated by combining STEP with oxidation ditch treatment.

9. **Emergency response to residents in construction zones:**

Construction contractors appear to have an emergency response plan for construction workers in place, but there doesn't appear to be a plan for emergency access for residents who reside in the construction area.

10. **Safety measures for pedestrian traffic on unlit streets at night during construction.**

Pedestrian traffic often continues until very late evening as people walk to the bay from their homes. Los Osos streets are unlit and, on moonless evenings, it can be very dark with severe visual limitations. This can be easily mitigated but the issue isn't addressed.

<u>QUESTIONS AND COMMENTS TO BE ADDRESSED</u>

1. Why was air quality not addressed and mitigated in DEIR Section I since emissions exceed allowable standards in all four projects during the construction phase and takes place in residential areas, some

with heavy pedestrian and bike traffic as well as other outdoor activities? How many truckloads for soil removal will be required for each project? 1. Why was air quality (specifically diesel exhaust from diesel powered equipment and vehicles not cross referenced in Section I?

2. How will trench walls be secured? How will public safety be ensured? Directional boring would eliminate the risks of collapse, worker injury, insurance costs, most soil disposal including much of the effluent contaminated soils (a result of the disturbance of effluent encased within soil lenses). Please explain how the projects under consideration offset these issues.

3. The 1994 Northridge earthquake gravity system repair took about 14 years to make the system operational and some repairs continue to the present. By contrast, most small pipe water lines were functional within about 24 hours. Los Osos is in a seismically active zone. With the always present risk of earthquakes, the separation/breakage/leakage of large pipes and subsequent health risk, the cost of reconnecting/rebuilding the system how, incorporating these points, please explain the advantage of large pipe rather than sealed, flexible small pipe?

4. How does the County plan to upgrade water as regulations expand? Cost is cited for the County's reason not to clean water to tertiary standards, but it is clear that this will become a future requirement (Morro Bay elected to include tertiary ahead of regulations). How will this be paid for at some future date? It is understood that the County intends to refer water quality issues to RWQCB and local purveyors, but as overseer of County health and environmental issues and, the increasing imperative to plan, test, monitor and address for emerging contaminants all analytical testing, toxicological testing and epidemiological research must become a priority in which all parties are held to a higher health and environmental standard. Because the project that is chosen can have a significant impact in many quality-of-life facets for Los Osos residents, please discuss the issues of tritium, and endocrine disruptors along with other frequently prescribed pharmaceutical's that are showing up in water supplies and how the County plans to meet stricter water quality regulations.

5. What are the prevention protocols for raw sewage/effluent surfacing at manholes and pump stations due to power outages, heavy storm overload/runoff, and earthquakes and why were they not included in the analysis? If there is no prevention plan, why not? Again, small, sealed piping would eliminate raw sewage spills and flexible pipe would significantly reduce joint separation/breakage/leakage, greatly reducing health risks additional costs from contamination.

6. Land slides can and are life threatening events. Storm incidence and earthquake probability make this a probable eventuality. What is the County's clean-up plan? How will homeowners be protected physically and financially? In addition, homeowners may find themselves ineligible for flood insurance through an added safety risk from a County design. How will this be addressed?

7. Were alternatives to methanol researched? If so, what were they and why were they eliminated? Is the use of methanol calculated in the comparison between projects? How was it weighted and how did it affect the selection outcome for the preferred project? What is the County plan in anticipation of climate change demands and greenhouse gases as they become increasingly regulated?

8. Construction contractors appear to have an emergency response plan for construction workers in place, but there doesn't appear to be a plan for emergency access to residents who reside in the construction area. Is there an emergency response plan for residents in construction zones? How/when will the public be notified?

9. Pedestrian traffic often continues until very late evening as people walk to the bay from their homes. Los Osos streets are unlit and, on moonless evenings, it can be very dark with severe visual limitations. This can be easily mitigated but the issue isn't addressed. Safety measures for pedestrian traffic on unlit streets at night are easily mitigated, such as continuous barriers with flashing lights. What is the plan?

10. How do you plan to deal with endocrine disruptors, 4-dioxin, 1,2,3 tri-choloropropane, and tritium (Los Osos proximity to Diablo) along with other more commonly used pharmaceuticals? How does the County plan to upgrade water for recharge as regulations expand? Based on fact, observation of environmentally progressive WW projects such as Arcata, CA., and common sense what upgrades in environmental laws, climate change, water protection, emerging health concerns and health safety regulation does the County project having to deal with in the next ten years?

# TRAFFIC AND CIRCULATION
## DEIR Section 5.8 and Appendix J

SUMMARY
Due to the quiet and isolated nature of Los Osos, the community will be significantly impacted by truck traffic and movement of equipment during construction. Moreover, the Highland/ Broderson area will also be seriously impacted during the re-construction of the Broderson leach fields every five to ten years.

DISCUSSION

The community will be significantly impacted by truck traffic and movement of equipment during construction, which is estimated to be 16-24 months long. The Highland/ Broderson area will also be seriously impacted during the re-construction of the Broderson leach fields every five to ten years. This may include hauling up to 6,300 truckloads of rock from Santa Maria to Broderson, and hauling contaminated soil from Broderson to a waste disposal site. This will also have an impact on air quality and noise.

Los Osos is well known for its maze of streets that are not paved throughout their length. Many streets turn into impassable dirt roads, then re-emerge as a paved street. The authors of the DEIR apparently relied on inaccurate maps when discussing traffic and circulation for collection routes. For instance, Dr. David Dubbink states in his report on Traffic: "The traffic analysis makes the mistaken assumption that 9$^{th}$ and 10$^{th}$ Streets are through connections to Santa Ysabel. This error would be significant if the project was expected to generate substantial traffic. The 'dogleg' connections to 7$^{th}$ and 11$^{th}$ Streets would reduce capacity."

We believe that this error is indicative of the consultants' use of out-dated, inaccurate, and incomplete sources of information, which may have economic and environmental impacts on the Project.

QUESTIONS AND CONCERNS TO BE ADDRESSED

1. The TMP includes notification to residents as the proposed sewer project moves from area to area: How will notification occur? Will the County ask contractors to hand-deliver notices? Will local residents have a convenient way to ask for clarification or call-in concerns and get answers?

2. The traffic analysis did not include any discussion on how many workers will be commuting into Los Osos daily. Was the number of employees commuting into and out of Los Osos factored into the traffic impacts?

3. Are there any other staging areas besides the one at Pismo and South Bay Blvd.? Where will 200 + employees park their vehicles? This could be a significant impact for 16-25 months.

* David Dubbink, Ph.D., Professor of City and Regional Planning at Cal Poly, San Luis Obispo; environmental planner; founder, owner of Interactive Sound Information Systems, a company that has worked with US military, FAA, National Park Service, etc. on noise management programs.

# AIR QUALITY
## DEIR Section 5.9 and Appendix K

DISCUSSION

The DEIR discusses both gaseous and particulate air pollutants, with special emphasis on greenhouse gas (GHG) producing aspects of construction and operations. Table 5.9-1 on SLO County's Annual Emissions (tons/ day) raises several questions about sources of high levels of emissions that are not clearly identified, including "Miscellaneous Process" area-wide, and "Other" mobile sources.

**Assumptions and their repercussions:** In its discussion of the current situation in Los Osos, the DEIR makes several assumptions from which it derives significant impacts to air quality. For instance, currently we have 4,281 septic tanks, which includes schools and businesses. The DEIR assumes that they have an average capacity of 1,500 gallons and that they are pumped every 5 years. Assuming that hauling trucks have a capacity of 3,000 gallons, this computes to 428 loads of sludge to Santa Maria per year.

Given that the majority of the existing septic tanks belong to residences, we might adjust the assumptions. If we assume that the average capacity is 1,200 gallons (most residential tanks are 1,000 gallons), and that the average period between pumping is 7 years, the resulting calculation would indicate that we currently average only 245 truck trips to Santa Maria per year – a significant difference of 57% less than the DEIR's assumptions.

**Thresholds of Significance:** According to CEQA guidelines, the Thresholds of Significance are intended to determine if impacts have significant environmental effects, including:

- Conflict or obstruct implementation of existing Air Quality Plan
- Violate or contribute to violation of Air Quality standards
- Result in cumulative "considerable net increase" of any criteria pollutant which exceed quantitative thresholds for ozone precursors
- Expose sensitive receptors (schools, seniors, people with health problems, etc.)
- Create objectionable odors affecting a substantial number of people
- Conflict with the County's General Plan

Both long-term (operational) and short-term (construction-related) emissions must be evaluated. THE SLO Air Quality Handbook of 2003 (SLOAPCD) indicates the following levels of significance;

- Less than 10 pounds per day of ROG, $NO_x$, $SO_2$, $PM_{10}$; OR less than 550 pounds per day of CO = *NO SIGNIFICANT IMPACTS*
- From 10 to 24 pounds per day of ROG, $NO_x$, $SO_2$; OR $PM_{10}$ has potential to cause significant air quality impacts but can be mitigated on-site = *LESS THAN SIGNIFICANT* IMPACTS

The conclusion of the DEIR is "The proposed project would not emit a significant amount of toxic or hazardous air pollutants; would not result in the release of a significant quantity of diesel emissions during its operation; and does not involve any remodeling or demolition activities." (Special Conditions, p. 5.9-8) However, it does indicate that further analysis is required regarding the treatment plant site at Giacomazzi due to its proximity to a preschool and its potential to cause odors.

**Greenhouse Gas:** CEQA states that the project must "evaluate potential environmental effects based to the ***fullest*** extent possible on scientific and factual data." Based on the California Office of Planning and Research (OPR) established thresholds of significance, the DEIR states: "LESS THAN SIGNIFICANT or NO IMPACTS were found related to the project causing impacts to be applicable air quality plan, violating an air quality

standard or substantially contributing to an existing or project air quality violation, creating objectionable odors, hindering a GHG Emissions Plan, or violating goals or policies of the County's General Plan." (p.5.9-8)

**Table 5.9-3 Air Quality Significance Determination** compares Proposed Projects 1, 2, 3, and 4. Considering the significant differences in the collection systems and site for the treatment plant site, it would seem that differences would be evident. However, the DEIR finds that ***all*** projects have the same impacts.

**Project-specific impact analyses: Project 1** (STEP collection, Giacomazzi/ Branin treatment plant site) assumptions include:
A collection point at the Midtown site (former "Tri-W")
4,679 new septic tanks (compared to existing 4,281 tanks)
129,000 linear feet of 4" lateral pipes
31,600 linear feet of 6", 8", or 10" PVC main pipes (in street)
203,600 linear feet of pressurized main (approximately half of it trenched)
18,700 linear feet force main from Midtown to out-of-town plant site (Giacomazzi)

> **Why does Project 1 assume the necessity of having a central collection point?**
> **Why should it be at the Midtown site (which is not the most efficient place to put it)?**

Based on assumptions on employee commute, excavation trips, trips to contractors' yards, and trips to the job site, the DEIR concludes that "construction of collection system (STEP/ STEG) in Proposed Project 1 would contribute to potential significant $NO_x$ and $PM_{10}$ emissions impacts." (Table 5.9-4)

> **Is this conclusion substantiated by an outside source who is expert in the construction of STEP collection systems?**

Septage Receiving Station is assumed in all proposed projects. However, according to the Technical Memo on Regional Septage Receiving, it is not economically feasible to build a septage receiving station at the LOWWP, regardless of the project selected. **A septage receiving station will never be able to compete with the Santa Maria location or pay for itself in fees, even if it serves a STEP LOWWP and other septic tanks in Los Osos.**

The DEIR evaluates the air quality impacts relating to Project 1's treatment plant and disposal components, and concludes, "Therefore, Proposed Project 1 would result in potential significant $NO_x$ and $PM_{10}$ emissions impacts during construction of the facilities at the disposal sites", and "at the treatment plant site." (p. 5.9-15) The DEIR later reiterates the same conclusion for Projects 2 and 3.

**Project 4** has higher construction and operation emissions than the other 3 proposed projects in all areas of air quality. (Tables 5.9-5 and 5.9-9) **Yet, the DEIR has determined that this is the preferred project. Why?** Project 4 has a longer force main from town to the treatment plant site (28,500 linear feet to Tonini), resulting in exceeding the pounds per day and tons per quarter thresholds for $NO_x$ and $PM_{10}$. In spite of this, the DEIR concludes that Project 4 has less than significant impacts from collection, treatment plant, and disposal.

**Sensitive Receptors** are identified as those who would be particularly sensitive to air quality pollution. The DEIR indicates that a plant site at Giacomazzi is within .2 miles of residences and .4 miles within a preschool, which potentially could be exposed to substantial pollutant concentrations during construction. Broderson is within .2 miles west and .3 miles south of residences which could be affected during construction - and reconstruction every 5 to 10 years - of the Broderson leach fields. This is a serious concern to the residents of this highly dense area.

**Mitigation** of air quality concerns is discussed in Table 5.9-10. The DEIR indicates that water trucks or sprinklers will be used during construction to keep down the dust. The usage of water will increase when winds exceed 15 mph. The DEIR emphasizes that reclaimed (non-potable) water should be used whenever possible. **In light of the Severity Level III of the Los Osos Groundwater Basin, we urge the County to *avoid* impacts, rather than mitigation for them, and to reduce the need for watering/ dewatering whenever possible.**

The DEIR recommends actions for revegetation and soil stabilization of areas impacted during construction as soon as possible. **We recommend that Low Impact Development strategies be employed during road restoration (after installation of collection system), rather than traditional curbs and gutters.**

The DEIR states that contractors shall have someone who monitors air quality at all times, including weekends and holidays. **We strongly recommend that the contact information for this contractor be available to the LOCSD.**

QUESTIONS AND COMMENTS TO BE ADDRESSED

1. **We ask that the assumptions for air quality and their repercussions, particularly for greenhouse gases, be more fully explained and scrutinized.**
2. Considering the significant differences in the collection systems and site for the treatment plant site of the four proposed projects, it would seem that differences in air quality impacts would be evident. However, the DEIR finds that ***all*** projects have the same impacts. **Please explain why.**
3. **Why does Project 1 assume the necessity of having a central collection point? Why should it be at the Midtown site (which is not the most efficient place to put it)?**
4. The DEIR concludes that "construction of collection system (STEP/ STEG) in Proposed Project 1 would contribute to potential significant $NO_x$ and $PM_{10}$ emissions impacts." (Table 5.9-4) **Is this conclusion substantiated by an outside source who is expert in the construction of STEP collection systems?**
5. It has been stated in TAC meetings that the project constructions period for STEP and gravity collection systems is significantly different. Gravity construction will take approximately two years, where STEP will take approximately 6 months. Since construction activities have the potential to expose sensitive receptors to substantial pollutant concentrations, **why was this difference not discussed in the DEIR? Please provide a more complete analysis reflecting this difference.**
6. It is not economically feasible to build a septage receiving station at the LOWWP, regardless of the project selected. **Why is this built into every proposed project? How does this contribute to the project's success in light of sustainability and affordability?**
7. **Project 4** has higher construction and operation emissions than the other 3 proposed projects in all areas of air quality. (Tables 5.9-5 and 5.9-9) **Yet, the DEIR has determined that this is the preferred project. Why?**
8. **In light of the Severity Level III of the Los Osos Groundwater Basin, we urge the County to *avoid* impacts, rather than mitigation for them, and to reduce the need for watering/ dewatering whenever possible.**
9. **We strongly recommend that Low Impact Development strategies be employed during road restoration (after installation of collection system), rather than traditional curbs and gutters. Please provide a revised design and recommendation that includes this approach.**

10. The DEIR fails to analyze the alternatives for renewable energy sources for the operation of the treatment plant site and disposal sites. **We request a full analysis of alternative energy sources and their potential to generate revenue.**

11. **We strongly recommend that a point of contact who monitors air quality be available to the LOCSD at all times.**

# NOISE
## DEIR Section 5.10 and Appendix L

## SUMMARY

Most concerns regarding noise would occur during construction. These include noise from truck traffic, including construction of in-street mains and Broderson leach fields; risk of structural damage resulting from pile driving during construction; and impact of noise on sensitive wildlife. According to Dr. David Dubbink, heavy trucks have the same acoustic impact as ten cars.

## DISCUSSION

The DEIR indicates that noise levels will exceed County standards but considers them "less than significant." Given the generally quiet nature of the community of Los Osos, the entire residential neighborhood within the Prohibition Zone is considered a "sensitive receptor," as well as the surrounding Morro Bay Estuary and the Cuesta Inlet Area. The construction phase of the Project will have the most significant impacts. In a separate report to the County (attached), Dr. David Dubbink* explains how vibration from pile driving operations exceeds the Peak Particle Velocity (PPV) threshold for residential housing. This is a significant potential impact for affected neighborhoods since there may be structural damage of houses and accessory units. LOCAC defers to Dr. Dubbink's report for his expertise in this area and requests responses to his queries and conclusions.

Construction noise associated with installation of the Broderson site includes the excavation of soil and installation of rock/rip-rap and other associated facilities. Truck traffic will be concentrated at the intersection of Broderson and LOVR. The noise associated with truck traffic going to and from Broderson is of extreme concern to residents in the immediate area.

In addition, the impact of construction-related noise on wildlife in our sensitive, habitat-rich area was not considered in the DEIR, in particular, the impact of noise relating to pile driving during construction. Dr. David Dubbink has indicated that noise levels of pile driving far exceed the regulatory limits relating to wildlife during the nesting season, which covers five months of the year.

* David Dubbink, Ph.D., Professor of City and Regional Planning at Cal Poly, San Luis Obispo; environmental planner; founder, owner of Interactive Sound Information Systems, a company that has worked with US military, FAA, National Park Service, etc. on noise management programs.

## QUESTIONS AND COMMENTS TO BE ADDRESSED

1. What are the significant noise effects of pile driving operations, and how will they be addressed? How does the County intend to alert residents of the possible noise impacts associated with pile driving operations? What mitigation, if any, will be included in the Final EIR?

2. If pile driving operations are employed, how will the County address vibration effects on existing structures? Has the County determined who will accept the liabilities relating to physical damage to existing structures?

3. Why did the DEIR fail to consider noise effects on birds, fish, mammals, and the entire natural habitat surrounding Los Osos? How will this be addressed in the Final EIR?

4. Will the neighborhood be advised of impending truck traffic and construction noise? How will the County address this noise factor at a neighborhood level?

**Noise Issues and the Los Osos Wastewater Treatment Project DEIR**
Prepared by David Dubbink

The noise study prepared for the wastewater project lacks relevant content. It doesn't address the central issues facing Los Osos. Rather than reciting the report's shortfalls this discussion focuses on what should be done to minimize noise impacts on residents and the natural environment.

The first step is to describe the acoustic setting.

Los Osos is a quiet place without major roadways or industry. The 1898 town plan featured a grid of 25 by 125 foot lots. This affects the acoustic environment in several ways. Some parcels have been combined to make larger building sites but there are many narrow lots. Neighbors are close and putting distance between noise sources and listeners isn't an option in many cases. The street layout didn't consider the undulating dune topography and through travel isn't possible on many of the streets. Some have never been paved. While the resulting pattern bewilders newcomers, it effectively slows traffic and reduces community noise levels. The irregular shoreline of the Morro Bay estuary contributes another layer of community segmentation. It also makes environmentally sensitive habitat areas and protected wetland areas part of the community fabric.

In summary, the town is unusual in several ways. Los Osos is a *quiet environment* but much of the *housing is closely packed*. Development is interspersed with *important natural resource areas*.

The next step is to identify the project features with a potential for producing noise problems. We'd look for things that produce lots of noise or for things that might be bothersome to people or to wildlife.

A partial list of noise sources includes the following:

- Construction activity, particularly the use of a pile driver associated with the gravity collection system. Presumably, this would have to do with construction of pumping stations next to the Bay.
- There are those OSHA backup beepers attached to heavy equipment that would be sounded during construction. They would also be sounded during operations particularly in association with the regular pumping of STEP tanks.
- Generators are used during construction. They also are part of the operation plan for collection systems. They provide standby power for pump stations during power outages. The previous plans for the gravity collection system included a number of pocket pumps that would not have standby power. During a power outage, a truck-mounted generator would circulate among the pump stations providing power to run the pumps long enough to empty each station's reservoir. This isn't mentioned in the DEIR project description but is likely to be part of the package.
- Chapter 7 (page 7-24) of the DEIR says that, with the STEP system, there will be noise from alarms mounted at each of the 4769 tanks and noise from intermittent septage pumping. Another section of the DEIR it is said that failure notifications will be managed through "telemetry" (page 3-47).[3] While there

[3] The methodology for "telemetry" is unexplored in the DEIR and conversations with project staff and STEP equipment providers indicates there is no consensus on how this would be managed. Connections might be through the Internet, through phone lines or by fiber optic cable. Any of these technologies potentially involves costs to homeowners and could have environmental impacts.

is nothing about either the alarms or the septage pumping in the project noise analysis these do deserve attention.

- The STEP system also includes 630 “air vacuum valves” that produce intermittent air releases.

**Addressing the Issues**

The following sections are organized according to the listing of potential noise sources listed above. It isn’t practical to attempt to forecast the exact levels of noise impacts but this doesn’t make it impossible to develop useful and workable impact mitigations. We can certainly improve on both the relevance and quality of those presented in the EIR draft. The strategy is to present the mitigations in the form of performance criteria.

**Construction Noise and Vibration**

There is one huge issue that looms above all others in considering noise impacts from construction activity. The project description says that pile drivers could be used in constructing the footings for pump stations. The EIR’s acoustic study addresses the issue but doesn’t provide useful mitigations.

Vibration is measured by several metrics but the one common to the most relevant reports is “PPV” or peak particle velocity measured in inches per second. The shaking is dampened by distance from the source and different types of soils behave differently. Water saturated, sandy soils conduct more of the vibration energy than average soils.

The noise study projects that a pile driver will produce a PPV of .644 measured 25 feet from the source. It also says that the significance threshold for vibration is any activity producing a PPV level above .2. The DEIR doesn’t report where this threshold comes from but it is likely from a publication by the Federal Transit Administration that is the source of other information in the DEIR. The FTA report incdicates that there is a likelihood of damage to non-engineered timber and masonry buildings when vibration velocity exceeds the PPV .2 level. The FTA report goes on and gives the PPV levels when other types of buildings reach a vibration damage threshold. For engineered concrete and masonry buildings (no plaster) the level is .3. For reinforced concrete, steel or timber buildings (no plaster) the PPV level is .5. In other words, the DEIR’s forecast vibration level for pile driver operations is, at 25 feet, in excess of the damage criteria for every building type.

Caltrans developed its own threshold criteria for evaluating vibration. The damage criteria are stated for newer and older structures and residences. For “modern industrial/ commercial buildings the PPV threshold level is .5 which is the same as in the federal report. For newer residences the level is also .5. For older homes the PPV threshold is .3. For historic and old buildings the level is .25 that is a bit higher than the threshold set in the FTA study. Still, in the case of all building types, the pile driving is likely to damage Los Osos structures.

The most interesting thing about the Caltrans study is that, in addition to assessing the likelihood of structural damage it has a table describing human annoyance potential. The threshold for perceptible vibration is .01. Vibration is “strongly perceptible” at PPV .1. It is rated as “severe” at .4.

The noise levels associated with pile driving are significant too. An “average” pile driver produces sound at a 101 dB level heard at a distance of 50 feet. This is greater than the takeoff sound generated by a contemporary commercial jet heard at an elevation of 1000 feet. A person shouting from 3 feet away produces sound at around the 85 dB level. The limit set in the county’s noise ordinance is 70 dB for stationary noise sources.

The pile driving is likely to crack buildings in Los Osos, the vibration will annoy everyone and the sound levels will be well in excess of county standards.

The noise study in the DEIR reports no information of how the vibration or noise levels might impact the natural environment but this is a major concern. There is a wealth of information on this topic.

**Mitigations**

**Pile Driving**
*AVOIDANCE* is the fundamental mitigation strategy for activities with environmental impacts that exceed acceptable thresholds. The Caltrans report cited above lists seven alternatives to pile driving that can reduce vibration and noise to acceptable levels. Such strategies are certainly justified for a community of closely spaced, older homes. The proposed pile driving sites are also spaced along at the shore of a natural area of recognized value and this also supports the need for avoidance.

The DEIR's response to the high potential for damage from pile driving is to pass responsibility for damage to the contractor. They are directed to survey the neighborhood and work with homeowners to document before and after conditions. The contractor is to pay for necessary reconstruction. Obviously, the assumption of such open-ended liability will increase the price of construction.

**Other Construction Noise**
When the DEIR discusses the noise from pile drivers or the noise produced by other construction equipment everything is treated in terms of averages. This obscures the variation that exists between equipment from different manufacturers or of equipment of differing ages. The DEIR study relies on tables taken from the FHWA's construction noise model. The performance data used in the model is, in turn, taken from Boston's "Big Dig" project where they formed the centerpiece of a program to minimize disruption from construction noise. In the Boston noise regulation program the "averages" served as the *upper limits* for the permitted noise from various types of equipment. Contractors were required to produce basic noise plans identifying the equipment that would be used and steps that would be taken to limit noise output. There also was a monitoring program to insure that conditions were being respected (inspectors could stop work if they were not). Information about all of this is available and could be easily adapted to the wastewater project.

The DEIR sidesteps the problem of construction noise by invoking the County's noise regulations that exempt construction noise as long as it occurs during specified periods. It is interesting that the FTA criteria specifically address the problem of relying on local ordinances.

Generally, local noise ordinances are not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use.

*Transit Noise and Vibration Impact Assessment Federal Transit Administration 2006*

The Federal Transit Administration reference undermines the DEIR's solitary reliance on the county's noise regulations to substantiate the notion that somehow the project's noise impacts are less than significant because they are exempted from regulation by the county's ordinances. But the environmental impacts don't go away. And CEQA specifically includes the regulatory standards of other agencies. The FTA and Caltrans criteria referenced above apply to a broad range of construction equipment and it is entirely appropriate to propose mitigations that are consistent with these standards.

**The OSHA beepers**

One element of the Boston program required that the sound level of the OSHA beepers be modulated according to background levels. They could be 5 dB louder than background but not more. Current models of beepers are adjustable and some are even designed to automatically vary sound output with ambient background. Adoption of the Boston condition would mitigate potential problems in the quiet Los Osos setting and still offer the necessary margin of worker safety.

**Generator Noise**
The DEIR adopts a performance standard approach in dealing with noise from generators. In proposing mitigations for the noise from the backup units it states that noise should not exceed a 45 dB level at the nearest residence. The condition is slight misreading of the county's requirement that measurements be done *at the property line* but the strategy is still workable. The mitigation condition should apply to generator noise both during construction and operations, including mobile units. The 45 dB property line standard needs to be evaluated for workability but noise at that level would be less than significant.

**STEP Alarms**
A tank alarm would be designed to be audible and 5000 of these going off at random intervals throughout the community would be a significant problem. The mitigation would be AVOIDANCE. The telemetric system (assumed to exist in some sections of the DEIR) should be made a condition.

**Septage Pumping**
The pumps will make noise and, with the close proximity of homes, there will be noise issues. The Boston approach of requiring use of quieter equipment is a reasonable mitigation. To support this, a survey of available equipment would need to be made but this is not technologically daunting and manufacturer information may be available.

**Air Vacuum Valves**
This offers the same opportunity for resolution as the septage pumping issue. The DEIR says the pressure release will be imperceptible but provides no supporting information. Hopefully the DEIR analyst has data to substantiate the valve's inaudibility. It should be made a procurement standard.

# AGRICULTURAL RESOURCES
## DEIR Section 5.11 and Appendix M

SUMMARY

The Tonini site was not evaluated in the Fine Screen Report, and its discussion in the DEIR is insufficient. Of the alternative treatment plant and disposal sites, Tonini has the highest rated soil – Prime Agricultural Class II – compared to Giacomazzi/ Branin (Class III).

It also has the greatest number of acres affected – 145.47 acres of a total of 646.6 acres - compared to Giacomazzi/ Branin, which have a total of 80 acres, of which 24-28 usable acres would be affected. Therefore, Tonini results in the greatest loss of agricultural acreage. (Land Use – C, Fine Screen, Section 6.3)

It is anticipated that any effluent applied to Tonini would only be treated to secondary levels. Toxins and emerging contaminants would percolate into the soil, contaminating Class II agricultural land and making it unusable for future crops.

The total cost of 646.4 acres would most likely exceed the Giacomazzi/ Branin site area of 80 acres.

Furthermore, the use of spray fields should only be considered as a temporary, short-term, emergency alternative for disposal of treated effluent. (Anything applied to Tonini will be lost to the groundwater basin permanently.) Hopefully, agricultural reuse contracts will be negotiated promptly, reducing or eliminating the need for spray fields at Tonini. In this event, Tonini would become a “stranded asset.”

DISCUSSION

The conversion of agricultural land to other uses and loss of agricultural revenue, constitutes an “Unavoidable Impact” that leads to the need for “Findings of Overriding Consideration.” These findings will be carefully crafted to withstand a legal challenge. Basically, they will state that the proposed project has an immediate and overwhelming public need for the proposed waste water project, and that loss of land can be compensated for with an “Ag Exchange.” Further, locally sensitive areas and uses can be protected via fences and buffer zones.

Under the discussion “Project-Specific Impacts Analysis” (DEIR pg.5.11-6) reference is made to Tables 5.11-7 and 5.11-8, neither of which are included in this DEIR Section but are located in Appendix M. Of the four properties under consideration, only the Tonini site has the highest rated soil: Prime Agricultural. If one combines the Soil Rating classes of Prime and Statewide Significance for the Tonini site, the total of 145.37 acres far exceeds any of the other sites under consideration. When you add Locally Important, Potentially Important Soils and Grazing the total for Tonini is 646.40 acres, while the total for all of the other three sites is less than 50 acres.

The proposal is to remove 175 acres from Agricultural Use. Mitigation includes a minimum of 175 acres of replacement land to be located nearby and assigned a permanent conservation easement or other similar status to the County or other appropriate entity. However, this action will not completely compensate the public for loss of prime agricultural land and therefore, the Board of Supervisors will have to approve special findings of “Overriding Consideration.” So far the argument for doing this seems to be that there are no other appropriate areas for spray fields.

The Williamson Act is a voluntary program. One way to "opt out" is to pay forfeited taxes or stiff penalty fees. Typically the land owner pays, However, if the County enters an agreement to purchase Tonini, there is room for negotiations such that the landowner may demand the penalties be absorbed by the County.

QUESTIONS AND CONCERNS TO BE ADDRESSED

1. How can the purchase of the highest quality prime agricultural land, Tonini, be justified for sprayfields, given its short term usefulness?

2. Why weren't all the reuse alternatives that affect agricultural land included equally in this DEIR section and the appendix?

3. Who will pay the farmland conservation easement mitigation (AG-1) penalties, since the DEIR states that "The project proponent will have to pay for administrative costs incurred by the easement holder (of the exchanged land)." (DEIR Pg. 5.11-11)?
    a. Who is the project proponent- CSD or the County or someone else?
    b. Have "administrative costs" been estimated? What are administrative costs and who will they affect?

4. Who will pay the Williamson Act "opt out" taxes or penalties, should they be imposed? The DEIR does not say who is going to pay those penalties? No discussion is included in the DEIR. Wouldn't the payment of these fees affect the total cost of the project?

5. Of the alternative treatment plant and disposal sites, Tonini has the highest rated soil –Class II Prime Agricultural, compared to Giacomazzi/ Branin, Class III. Why does the DEIR select Tonini as a preferred site for treatment? (Land Use - C)

6. Applying effluent that has only received secondary treatment to Tonini spray fields may render this prime agricultural land unusable for crops for generations. What is the mitigation plan for this loss of prime agricultural land? What are the associated costs for mitigation? (Groundwater - D)

7. Impact 5.11-B (p. 5-11-15) appears to have a misprint. It should be: "The project *would* conflict…." , instead of "*would not* conflict".

8. Misprint on p. 5.11-3 under section 5.11-5. Should be "Appendix M-1" instead of Appendix N-1."

# VISUAL RESOURCES
## Section 5.12 and Appendix N

SUMMARY

Visual impacts at the proposed Broderson site, an 8 acre leach field, are not accurately portrayed. This site will require cyclone fencing, some out buildings, night time lighting and removal of mature trees. In the 2003 Montgomery Watson Herza report, the project area was located mid way up the hill. This proposed project is approximately 200 feet above residential homes and will be visible to many residents from their Highland Drive back yards as well as from Broaderson Avenue residents and from travelers headed southerly up the street.

No detailed information is presented on what the visual affects would be. Photos provided in the DEIR (Exhibit 5.12-4) are from unique angles, such that they do not represent the true views that would be experiences by Broderson area and from Cabrillo Estates. Photos 1 and 2 are attached as adjunct visual evidence.

Mitigation measures include revegetation of the leach field every five years following the required removal and replacement of the leachfield disposal area.

The existing mature Eucalyptus trees, with several distinctive groves, have been a visual monument for years. The habitat they create serves wildlife as well as local residents who walk paths in the area, horseback riders and children who play amongst the trees. These mitigation measures are not now available since the requirement is to provide a landscape plan at a later date.

The 2003 project used an area mid way up on Broderson, yet the current leach disposal area is much closer to homes and Highland Drive, and may necessitates the removal of many of the historic Eucalyptus groves. Without detailed plans, no one can tell what the Broderson site will look like from surrounding views and views from as far as the Morro Bay State Park.

The Gravity Collection System for projects 2, 3, and 4 requires a central collection point and pump station. This pump station would be above grade with the approximate dimensions of 25 by 14 feet and approximately 17 feet in height. According to the County the pump will be housed in a “residential style” building. The exact location is not indicated, but it appears to be somewhere in the vicinity of the Library. This may present a visual impact, but would require mitigation similar to the above landscaping.

The DEIR does not compare project components, so it should be noted that Project 1 (basically the prior Ripley plan) does not include the Mid-town site and would not have a visual impact. Because there is no need for sprayfields in the Ripley plan, there would be no visual impacts at Tonini.

At Tonini (and the other three sites) the visual comparisons are again misleading using photos from distances that don’t depict what one would see from Los Osos Valley Road or Turri Road.

Since Turri Road is now listed as a scenic corridor (Estero Area Plan), it includes both the Tonini property and the Morros. Views of the current agricultural setting will be altered with cyclone fencing, industrial buildings, holding ponds and sprayfields.

DISCUSSION

1. **Where are the details about tree removal at Broderson?** See photos 1 and 2 below. A Photoshop rendition of what the leach field area would look like with trees removed, fencing and industrial leach area and outbuildings would more clearly address the visual impact.

2. Page 3-14 states: "None of the four proposed projects includes the Mid-town site as a *treatment* plant site; however, three of the four proposed projects (Proposed Projects 2, 3, and 4) include a small portion of the Midtown site (0.1 acre) to construct an underground central pump station to pump all the wastewater collected from the Los Osos Wastewater Service Area (see Exhibit 3-2) to the treatment plant."

3. The description on page 5.12-48 describes Projects 1-4 stating that "Project elements would primarily consist of ground level elements such as storage ponds, which would minimize visibility."
   **This is a misleading statement. Why would this statement stand? It should be modified to include all fencing, lighting, buildings or other construction.**

4. Proposed Project 1 includes the Mid-town site as a central collection point for the wastewater, but it does not require a pump station at Mid-town to pump the collected wastewater to the treatment plant. Sufficient pressure would be provided by the individual STE pumps for each connection.

   Page 5-12-5 DEIR: Impact 5.12-C: The project would substantially degrade the existing visual character or quality of the site and its surroundings. Following construction, the Mid-town parcel would include a pump station that would be above grade. However, the size of this facility would not be sufficient to degrade views of the surrounding area. Therefore, long-term impacts would be less than significant at the Mid-town parcel.

   **Do Projects 2, 3, and 4 require an underground pump station or an above grade pump station at the Mid-town site?**

5. 5.12.6 - Mitigation Measures, 5.12-C2: A final landscaping plan shall be prepared for the entire project site and approved by the County prior to building permit issuance. Said landscaping plan shall emphasize native plant materials and shall include sufficient planting to screen views of the project from nearby roads and residential developments. The landscaping plan shall visually integrate the project into the rural landscape, while preserving and enhancing existing views.

   **Why not provide a typical building plan that indicates what will be developed at the Mid-town site and a typical landscape plan for both Broderson and Mid-town?**

6. **On the Mid-town site there appears to be a full revegetation project for the entire 11 acres. Is this correct? This needs more definition, as does any revegetation of other project areas.** See photo 3 below for view of corner for proposed sewage transfer station.

7. **Will the Broderson leach fields sustain native plants in soil that is disturbed and changed and wet most of the year?**

8. Mitigation 5.12-C1 states that construction staging areas shall be located away from sensitive viewing areas to the extent feasible. Sensitive areas are defined as viewing corridors and residences.

   **There is no description or location included in the DEIR. Where are the staging areas?**

9. If the Broderson site is used for effluent disposal, it is important to evaluate compliance with the new DHS Groundwater Recharge Reuse criteria (because there is no vadose zone and there would be intentional recharge to the upper aquifer, which has historically been used for potable supply). (NWRI Final Report December 4, 2006)
   **Will Broderson require future harvest wells? If discharge rates exceed 448 AF at Broderson and harvest wells become required, what would be the visual impacts of the wells?**

Photo 1. Broderson site Eucalyptus and Cypress trees that will most likely need to be removed.

Photo 2. Looking down from Cabrillo at the Broderson trees.

Photo 3. Visual of corner for proposed sewage transfer station.

# ENVIRONMENTAL JUSTICE
# DEIR 5.1 3 and Appendix O

## SUMMARY

None of the proposed projects have a disparate impact on any disadvantaged group. None of the proposed projects conflict with the environmental justice goals or policies of any jurisdictional agencies.

## DISCUSSION

Environmental Justice is defined in California law (Government Code 65040.12 as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws and policies." (p. 5-13-2, DEIR Appendix O)

This section does acknowledge that there will be a **disparate financial impact on low income households**. However, by regulatory definition, affordability is not an environmental effect.

Title 14 California Code of Regulations (CCR) Section 15131 provides that **economic or social information** may be included in an EIR, but those economic or social effects shall not be considered significant effects on the environment. (DEIR, Appendix O, p. 5.13-7, emphasis added)

Disparate impact occurs when a disadvantaged group (i.e. low-income and/or minority status) is harmed more than other groups. This appendix concludes that no disadvantaged group will be harmed more than any other group, excluding the affordability issue.

This section concludes that there are no adverse effects or impacts that are appreciably more severe in magnitude, or are predominantly borne by any segment of the population. (Appendix O, p 5.13-8)

The DEIR states that there is no conflict with any applicable environmental justice goals, or policies of an agency with jurisdiction over the project. (Appendix O, p 5.13-8)

# ALTERNATIVES
## Section 7 and Appendix P

SUMMARY

Wastewater treatment requires three components: Collection, Treatment and Disposal.

In the DEIR Statement of Purpose it follows this order: to "evaluate the potential environmental impacts associated with a wastewater collection, treatment, and disposal system for the community of Los Osos (Los Osos Wastewater Project, or, LOWWP)."

However, Appendix P reverses the order of consideration, making it difficult for the reader to follow. Also, there is little discussion of the alternative collection options, which are 70% of the overall cost of a complete system. There is no analysis of the pros and cons of the collection system options.

The discussion concludes that all components have equal potential to work in any combination. Reviewing best systems, rather than components, would give a better view of the potential environmental impacts. This analysis makes that impossible.

The DEIR describes the 'Criteria for Development' of the project objectives, including the following:

(3) "Mitigate impacts of the LOWWP on water supply and saltwater intrusion." And, "further the wastewater project will maintain the widest possible options for beneficial reuse of treated effluent."

(4) "Minimize potential environmental impacts on the Los Osos community and surrounding areas."

(5) "Meet the project water quality requirements while minimizing life-cycle cost."

The analysis fails to address #3. The DEIR criteria development also wasn't applied to the collection alternatives (#4 and #5). The collection component of a system has the highest potential to affect cost, ground water quality, safety objectives for Morro Bay, operation and maintenance, installation time, and lifecycle costs. There are important comparisons that haven't been made.

DISCUSSION

Presently the prior MWH Gravity collection has received top support by the County as being "shovel ready" to receive approval from any new government infrastructure funding. Because this funding is for green technology, there should be a better analysis of the alternative collection options. The failure to clearly review the STEP, Vacuum, and Low Pressure systems does not seem prudent.

11 ~ 3.1 Wastewater Treatment Process Alternatives

ISSUE: This section defines 7 treatment technologies yet fails to compare the STEP effluent treatment to the gravity raw sewage treatment differences. It also fails to connect the amount of sludge potential for each technology. This could range from no sludge facultative ponds to daily truckloads to Santa Maria for most of the other plant treatments. There is also no reference to the footprint or energy efficiency of these 7 systems. This information should be included in the description for more clarity.

13 ~ 3.2 Effluent Disposal/Reuse Alternatives

ISSUE: This section describes 7 methods of disposal but fails to discuss footprint and energy costs. There needs to be a professional review of the Broderson disposal plan as it may not return enough water to the lower aquifer to make it financially reasonable, compared to other disposal options.

13 ~ 3.3 Candidate Siting Alternatives

The following candidate sites can be located and viewed using the provided APN number on the interactive GIS map maintained by SLO County: http://www.sloplanning-maps.org/ed.asp?bhcp=1

Figure 1: Summarizes the locations of the proposed treatment plant sites considered for the LOWWP.

ISSUE: Twelve locations are presented with no differentation between land costs, feasibility to impact ESHA vs quality of farmlands (Class 1 soils vs Class 3). Several of the locations fell to the bottom of the list in the prior EIR and should be noted. Andre was the environmentally preferred site in the prior EIR.

ERROR: This section fails to describe what value the Mid-Town site, and its mitigation property on Broderson, have as a treatment plant facility/disposal site. The County's preferred projects all use the Mid-Town location as a receiving site for collection and lift pump station, yet only the proposed Gravity collection system, as previously designed, might need a portion of this 11 acre parcel or Broderson. STEP, Vacuum, and other collection systems DO NOT require use of either the Mid-Town site, Broderson, or Tonini in their design. The Mid-Town/Broderson sites have huge costs associated with them and this should be discussed up front. The properties could be sold to recover monies previously spent on the LOWWTP for the purchase of more appropriate properties.

Also Tonini is outside of our aquifer and the most distant. This needs to be noted. Spray fields will waste ALL of our treated effluent guaranteeing the advance of salt water intrusion.

16 ~ 3.4 Biosolids Disposal Alternatives

ERROR: There is much discussion for the Biosolids handling but it is never associated with the different treatment technologies. Therefore, there is a failure to address the impacts of NO SLUDGE production from the ponding treatments. This is a glaring failure and must be corrected for a fair analysis. If a STEP collection delivers only 10% of the solids and a tank is pumped every 7 years, what is the treatment cost from septic 90% pre-treatment vs. the daily accelerated treatment of a full treatment plant? These are green questions that deserve an answer before this EIR is complete.

18 ~ 3.5 Collection System Alternatives

Conventional Gravity Collection System (GS): GS systems are the most common wastewater collection systems. This type of system is also referenced as a solids-handling (SH) system. They consist of gravity sewer lines with a minimum diameter of 6- or 8-inches and manholes at change of grade or direction, or at intervals of approximately 350 feet. GS systems convey both solids and liquids. A conventional gravity system requires lift stations and pump stations to move sewage to a treatment plant site.

MISSING: The depth of the collection pipes (on an angle from 8-23 ft deep), the dewatering of trenches, correct angle for conveyance, and sometimes complicated lateral connection resulting in street disruption, danger of renching in sand and the necessary location of trenching in the middle of roadways due to the raw sewage

conveyance (vs. pre-treated effluent) involving 42 miles of roadway damage.

Septic Tank Effluent Pumping System (STEP): STEP systems convey septic tank effluent (STE) only; they do not convey solids. They use septic tanks at individual service connections to retain the solids. STEP systems use pumps at each septic tank to pressurize the collection system and convey the STE to a main pump station or treatment facility. The collector lines are small diameter (2- to 4-inch) that feed into larger interceptors.

MISSING: Fails to address that 90% of the solids receive pretreatment in a Septic Tank. Fails to represent that STEP is trenchless and can go in the rights-of-way instead of the roadways. Fails to describe the conveyance of pre-treated effluent vs. raw sewage, certainly a health and safety issue. Fails to define the low energy use of the pumps that pressurize the system. Fails to describe the length of construction times between Gravity and STEP. STEP is estimated to take six months to install, Gravity could take 2-3 years to install.

Septic Tank Effluent Gravity System (STEG): STEG systems are similar to STEP systems, but do not have individual pumps at each septic tank; conveyance is by gravity. However, since solids are not conveyed, pipe diameters are smaller than for GS systems and manholes are not used in the system.

MISSING: Fails to describe that STEP/STEG is a COMBINATION of pressure and gravity where available. This combo could greatly reduce the energy costs of installing a STEP system. It also fails to describe directional boring installation (trenchless) and describe the depth of the pipes (4-5 ft) that can go in the right of ways, not disturbing most of the 42 miles of roadway.

Vacuum System (VS): VS systems rely on vacuum stations to create a collection system that operates under a vacuum. There is a vacuum/interface valve and small retention facility at each service connection that opens when the retention facility is full and allows the solids and liquids to be conveyed to the main vacuum station. Vacuum systems are closed systems where the pipes can follow the natural grade and can be smaller diameter than in GS systems.

MISSING: Fails to describe the size of the ‘small retention facility’ at each connection and the fact that several homes could share one ‘retention facility’. Fails to describe the number of main vacuum stations compared to the Gravity lift stations. Fails to clearly describe how the vacuum can convey the raw sewage in small pipes directionally bored. This system also has far less impact on the 42 mile roadway system and is not described.

Low Pressure Collection System (LPCS): LPCS use individual grinder pumps at each connection that grind up solids and convey the resulting slurry to a treatment site or pump station. LPCS are similar in design and operation to STEP systems, except that no individual septic tanks are used and both solids and liquids are conveyed for treatment.

MISSING: Fails to describe the type of grinder pumps and where they would be located. This system ALSO avoids major destruction of the roadways by being directionally bored at a shallow depth.

CONCLUSION: This section confuses the pros and cons by NOT ADDRESSING the most important areas of concern and comparison. It completely leaves out that the STEP and STEP/STEG systems both utilize a Septic Tank as part of their collection and that this tank is part of the TREATMENT system and solids collection also.

It fails to address the transport of raw sewage vs. pretreated effluent.

It complicates the discussion of sludge handling by not differentiating 7-10 yr septage solids collection from individual tanks vs. daily sludge production of the other systems.

It also leaves out other major factors by placing cultural, energy, water disposal/re-use, cost, air pollution, dewatering during construction, traffic and circulation, public health and safety and geology for review in separate Appendices.

It also has left out any discussion of mini plants. The EPA recommended this type of solution when they visited Los Osos in the early 1990s. They opposed installing a Gravity system calling it "over-kill" and not appropriate technology for our community.

19 ~ Section 4: Criteria Development

One of the objectives of the current Tech Memo is to identify the criteria that will be used in the subsequent analyses for screening the alternative project components. The resulting subset of components will be used to define the project alternatives that will be analyzed in the DEIR. The criteria to be used in evaluating alternative components are based on the LOWWP project objectives. These objectives were developed to address the major issues that are driving the LOWWP. The project objectives are as follows:

1. Alleviate groundwater contamination – primarily nitrates;
2. Address the issues of water quality defined by the Regional Water Quality Control Board through its issuance of Waste Discharge Requirements (WDR) for discharge limits;
3. Mitigate impacts of the LOWWP on water supply and saltwater intrusion. Further, the wastewater project will maintain the ***widest possible options*** (emphasis added) for beneficial reuse of treated effluent;
4. Minimize potential environmental impacts on the Los Osos community and surrounding areas;
5. Meet the project water quality requirements while ***minimizing life-cycle costs*** (emphasis added); and
6. Comply with applicable local, state, and federal permits, land uses, and other requirements, including the Local Coastal Plan, Environmentally Sensitive Habitat Areas (ESHA standards), State Marine Reserve, and archeological concerns.

PROBLEM: This criteria leaves out ECONOMIC IMPACT. It also contradicts discussions about re-use by removing most of the Treated Effluent re-use criteria and delegating it to the water purveyors through the Interlocutory Statutory Judgment (ISJ). Failure to make re-use a component of the project design and criteria will likely result in furthering salt water intrusion by shifting this responsibility to purveyors who may take years to resolve water re-use. It is assumed the empty lots will pay for purple pipe in order to build out their property. This is not a responsible plan because it

# GROWTH INDUCING IMPACTS
## DEIR Section 6

SUMMARY

The DEIR states that construction and operation of the Los Osos Wastewater Project could result in direct growth inducement because the project will lead to the removal of the discharge moratorium within the Prohibition Zone. Although the RWQCB may lift the moratorium, it is not likely that growth will occur quickly due to the restrictions in the Water Conservation Ordinance in effect at this time. In fact, unless the wastewater project considerably reduces the rate of seawater intrusion, it is likely that some kind of building moratorium will continue to be in effect in Los Osos due to the limited water supply. In addition, without an HCP, it's unlikely that building will occur.

However, placing the treatment site far out of the town of Los Osos may cause the town to expand if enough precautions are not put in place to prevent the sprawl. This section lists many factors that will influence and limit future growth, but there is no mitigation section that requires these to be implemented.

The DEIR is using old population data and growth rates to determine the size of the wastewater facilities and the population that it will serve. The Estero Area Plan Draft Update of 2004 proposed a significantly lower buildout maximum of 19,713 for all of Los Osos vs. 28,688 that comes from the older plan. One of the reasons that the Coastal Commission has not approved this plan yet for Los Osos is because of the uncertainties in the buildout figures that may still be too high, due to the water shortage and water quality issues in the water basin. Sizing the plant based on older population data and higher water usage figures that do not take current conservation rates into consideration will be a direct growth inducing impact.

DISCUSSION

1. **Table 6-2, Buildout Population and Housing Data, is outdated and should be replaced with data based on the 2000 Census and the current Housing Element Update (2008).**
   Using the older data will cause the wastewater facilities to be oversized and be an inducement to growth. Oversizing the plant will encourage serving areas outside of the prohibition zone and outside of the town.
2. **Because the treatment plant will be placed outside of town, with the potential for inducing growth to the east, why were mitigations not included for this section?** There is a list of factors that will limit growth, but specific ones should be included as mitigation; e.g., agricultural easements that restrict properties from extending service lines, greenbelt and open space designations, and careful sizing of the capacity.
3. **As a protection against potential growth inducement, we strongly recommend the use of conservation easements along the pipeline from town to the treatment plant**, which would prohibit hook-ups along its length.