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Department of Public Works
San Luis Obispo County

Comments on the Draft EIR for the Los Osos Wastewater Project

Dear Mr. Hutchinson:

Thank you for the opportunity to comment on the draft EIR. The community's lack of a proper wastewater disposal system has been a significant and longstanding environmental problem. The project needs to move forward. However, it is also important to insure that project construction and operations have minimal environmental and social impacts on the community. The DEIR proposals and mitigations need to be better focused in responding to some of the special issues present in Los Osos. There are also some errors in need of correction.

My review of the project is concentrated on several topics that are of special interest to justice. As a homeowner and owner of rental property in Los Osos I am directly impacted by whatever form of wastewater treatment is adopted. I might also note that I have worked in the field of environmental planning for a number of years and, as a professor at Cal Poly, have taught courses dealing with many of the issues related to environmental protection. I understand the range of technologies that are applied and the legal framework used in impact analysis. I feel it appropriate to make a careful review of the wastewater project and its many impacts on the community and share my insights.

I'm a specialist in community noise issues and will start with that.

Noise- The Acoustic Setting
The initial step in any study of noise impacts is to describe the acoustic setting. While the DEIR provides some noise readings there is little in the way of descriptive interpretation. It might have noted that:

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 today's acoustic environment in several ways. Some parcels have been combined to make larger building sites but there are many homes on the original narrow lots. Neighbors are close so 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 geographic complexity. Environmentally sensitive habitat areas and protected wetland areas are woven into the community fabric. Los Osos is also a destination for coastal visitors who appreciate its unhurried character and its attractive natural setting.

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

As an analytic document, the DEIR's acoustic study has multiple problems. I is based on a model that is appropriate for evaluating a shopping center but is less relevant to designs for a wastewater treatment system. Most of its analytic energy is expended in describing the impacts of noise from traffic generated by the project alternatives. Unsurprisingly, the choice of a wastewater collection and treatment system is shown to have a less than significant impact on traffic and traffic noise. The roadway noise prediction technology used is outdated and math doesn't take proper account of the volume of truck traffic but a proper redo of the analysis wouldn't change its unsurprising conclusion. It is bothersome that the narrative includes an erroneous description of Caltrans policy concerning thresholds of significance but an accurate citation this wouldn't change the conclusion either. Noise from project traffic isn't much of an issue but there are other sources that are significant. The study gives no attention given to dimensioning the two major sources of noise for the STEP system described in Chapter 7 of the DEIR . These are said to be tank alarms and the pumping of septage (page 7-24) . The study also misses one of the more significant potential impacts altogether – the impact of project noise on the coastal wildlife. Most importantly, it fails to provide noise limits and enforceable mitigations for management of noise impacts.

Rather than reciting the report's shortfalls and hoping for some positive response from the DEIR consultant it is better to just describe the acoustic impacts of the project and say what should be done to minimize noise impacts on residents and the natural environment[1].

Potential Noise Problems

After defining the acoustic setting and issues, the next step is to identify the project features with a potential for producing noise problems. We'd look for activities 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 part of the future project

[1] Comments on the problems with the DEIR noise analysis have been provided separately.

operations scenario, particularly in association with the regular pumping of STEP tanks.

- Generators are used during construction. They are also part of the operation plan for the gravity collection system; providing standby power for pump stations during power outages. The previous plans for the gravity collection system included ten pocket pumps without 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 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 reports that failure notifications will be managed through "telemetry" (page 3-47). There is nothing about either the alarms or the septage pumping in the project noise analysis or proposed mitigations and these topics deserve attention.
- The noise study says that the STEP system also includes 630 "air vacuum valves" that produce intermittent air releases (The project description in Appendix __ puts the number at 1000)

Addressing the Issues

The following paragraphs are organized in the same order as the listing of potential noise sources listed above. The DEIR analysis does present information about noise (and vibration) from pile driving and stationary generators but not other sources such as septage pumping or air valves. It would have been better to have the noise production information for all sources but this shortfall doesn't make it impossible to develop useful and workable impact mitigations. The strategy is to present the mitigations in the form of performance standards.

Construction Vibration and Noise

There is one issue that looms above all others in considering vibration and noise impacts is noise from pile driving during construction. The project description says that pile drivers could be used in constructing the footings for pump stations. Half of the 18 pump stations are adjacent to the bay. The EIR's acoustic study identifies potential problems related to ground vibrartion but it doesn't provide authentic 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 dampen the vibration energy less 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 states that the threshold of significance for vibration is any activity producing a PPV level above .2. The DEIR doesn't report where this threshold comes from but the source is probably publication by the Federal Transit Administration (FTA) referenced in other places in the DEIR . The FTA report indicates 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 buildings of every type of construction, old and new.

Caltrans developed its own threshold criteria for evaluating vibration[2]. The damage criteria are stated for newer and older structures and for 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, a bit higher than the threshold proposed in the FTA study (and the DEIR). Still, in the case of all building types, the pile driving would damage Los Osos structures.

The Caltrans report includes a formula for calculating the spread of vibrations. Putting the DEIR data into the Caltrans formula we can calculate the distance from the source to the PPV .2 level. The diameter of the circles of likely structural damage is 140 feet across. Figure 2 shows circles of this size superimposed on an aerial photo of a portion of the impacted area.

In addition to assessing the likelihood of structural damage, the Caltrans study includes 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. By the Caltrans standard the vibration levels experienced will be severe at 25 feet. The Figure 1 diagram does not show the larger diameter rings that would define the PPV .1 level. The region where the impacts would be strongly perceptible is calculated to be double the diameter of the circles shown in the figure.

Figure 1: Regions of Structural Damage

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 level exceeds the OSHA workplace standard of 90 dB.

[2] *Transportation- and Construction-Induced Vibration Guidance Manual*, Caltrans, June 2004.

In summary, vibration from pile driving is likely to damage buildings in Los Osos. The sound levels are well in excess of county standards and the standards of other governmental agencies.

The noise study in the DEIR reports no information of how the vibration or the noise levels might impact the *natural environment* but this is certainly a topic of major concern. In other projects, such as the renovations to the Morro Bay State Park campground across the bay, there have been time-of-year restrictions on activities that might disturb nesting birds. The biology section of the DEIR does not directly address vibration or noise issues but proposes that, prior to construction, biologists survey the project area for nesting birds and raptors. Construction is to be set back from active bird nests by 250 feet. The setback for raptor nests is 500 feet. These distances might be appropriate but they should be substantiated by reference to the considerable literature on this topic and by references the mitigations associated with similar scale projects along the California coastline.

Mitigations

Pile Driving
The DEIR's response to the high potential for damage from pile driving is to pass responsibility for the resulting structural 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 by contractors could increase the bid price of construction. A far better option would be to employ less potentially destructive construction methodologies.

The Caltrans report lists seven alternatives to conventional pile driving. The DEIR proposes use of a pile driver equipped with a "damper" and this is one of the seven options suggested by Caltrans. The report says dampers can reduce impacts by half - but even with such a reduction the numbers indicate that structural damage remains likely. The mitigation doesn't reduce the problem to less than significant levels.

AVOIDANCE is the fundamental mitigation strategy for activities with environmental impacts that exceed acceptable thresholds. Such strategies are certainly justified for a community of closely spaced, older homes. Also, the proposed pile driving sites are spaced along at the shore of a natural area of recognized value which reinforces the argument for avoidance.

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 the noise data 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, when it would be used, its location 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 Los Osos wastewater project. The construction noise management plan for the project is found at:

http://www.nonoise.org/resource/construc/bigdig.htm

It might be noted that the county of Ventura has developed threshold treatments for construction noise that follow this pattern. A PDF version of this document is appended to the email version of this letter.

The DEIR sidesteps the problem of construction noise impacts by invoking the County's noise regulations that exempt construction noise as long as it occurs during specified periods. There is a logical problem with this in that the schools and the town's library are noise sensitive and don't benefit from the temporal restriction.

It is interesting that the FTA manual referenced in the DEIR as a source for data, specifically warns against exclusive reliance 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 CEQA specifically includes the regulatory standards of other agencies in its guidelines. 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 not be 5 dB louder than ambient sound. Current models of beepers are adjustable and some are even designed to automatically vary sound output with background levels. 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
Another prominent noise source could be electrical generators used during construction and during project operation when they would be used to operate facilties in times of power outages. The Avoidance option applies to operation of generators within the town since electrical equipment can be powered by connecting to the electrical grid.

The DEIR adopts a performance standard approach in dealing with noise from the backup 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 since measurements are to be made *at the property line* but the concept is workable. The mitigation condition might apply to stationary generators and the mobile units.

But there is an issue in that it could be difficult to meet the 45 dB standard. The DEIR asserts that a building housing a standby power generator would reduce the noise from a generator by 20 dB. The reduction is valid for conventional construction for a structure *with windows closed*. The generator requires venting for exchanging air and exhaust. Meeting the 45 dB property line standard may be impractical without extraordinary construction expense. This issue, and the question of providing similar shielding to equipment during construction or for the mobile generators used with the pocket pump stations, needs development. It may not be practical to bring noise levels to the point where they meet the County standards. If this is the case it would be appropriate to cite the temporary nature of such noise events and consider this impact with those covered in the project's statement of overriding considerations.

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 project condition or mitigation.

Septage Pumping
The pumps will make noise and, with the close proximity of homes, there will be noise issues. The DEIR provides no information on this but 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. This is not technologically daunting and manufacturer information may be available. The DEIR consultant should develop this information and provide a performance threshold for septage pumping equipment for the STEP system and for the Vactor equipment if the gravity system is selected.

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. Inaudibility should be made a procurement standard.

Summary – Noise Managment
The Boston and Ventura County programs provide a useful template for preparation of a noise management program for construction and operation of the wastewater project. The fundamental features are: 1) to encourage selection of quieter equipment, 2) develop noise management plans during the construction phase that put separation between noise sources and noise sensitive activities, 3) providing for documentation of implementation and, where needed, oversight and enforcement.

Soil Displacement
The DEIR presents excavation requirements solely in terms of cubic yards of excavation. But the surface area of disturbance is of importance too. For homeowners, it is the amount of landscaping that will be destroyed or displaced. Some natural areas will be disturbed and there will be increased potential for soil erosion. Cultural artifacts are typically found close to the surface. The nature of the qualitative differences between the excavations for the STEP and gravity system is obscured by the reliance on cubic yards of displacement. The DEIR should give the area of the surface disturbance for the alternate collection systems as well as the volume of displacement.

There may be a problem with the assumption concerning the size of a STEP tank excavation. This is significant because whatever number is used is multiplied by the number of tanks. The DEIR gives the dimensions as 40 cubic yards for a tank that is 16 by 8 (Appendix B, page 3-9). The 1,500 gallon Orenco fiberglass tank has 15 x 7 dimensions. Installation requires side clearances greater than six inches. Orenco's installation guide recommends a one foot gap on all sides. This makes the area of the excavation 17 x 9 at the broadest portion of the tank (the flange around the mid-section).

Moreover, the sandy soil in Los Osos cannot be reliably excavated with straight down sidewalls. If the excavation slope is 2:1 and the slope is calculated to the midpoint flange on the tank, the area of the disturbed surface measures 25 x 17. The Figure 3 on the following page illustrates the scale of such an excavation. The DEIR estimation of soil displacement should be recalculated to allow for proper side clearance for installation and likely slope of the excavation. It is likely that this will reverse the conclusion that there is less soil displacement associated with STEP[3]

The Biologic Resource section of the EIR is inconsistent with the DEIR's comments on soil displacement. The section wrongly asserts that there is a "lack of excavation and habitat disturbance" with the STEP alternative (page 5.5-40). This mistaken notion leads the writer to conclude that the potential impacts, "to sensitive natural communities associated with the ESHA within the community of Los Osos" are significantly greater with the gravity collection system". It appears that the opposite is true – the STEP system displaces as much as twice the surface area as the gravity alternate. Would an opposite conclusion regarding disturbance of natural areas alter the DEIR's conclusions and mitigations?

[3] A spreadsheet describing surface and soil displacement was prepared independently of that produced for the DEIR. A copy of this in interactive spreadsheet format is appended to the email version of this letter.

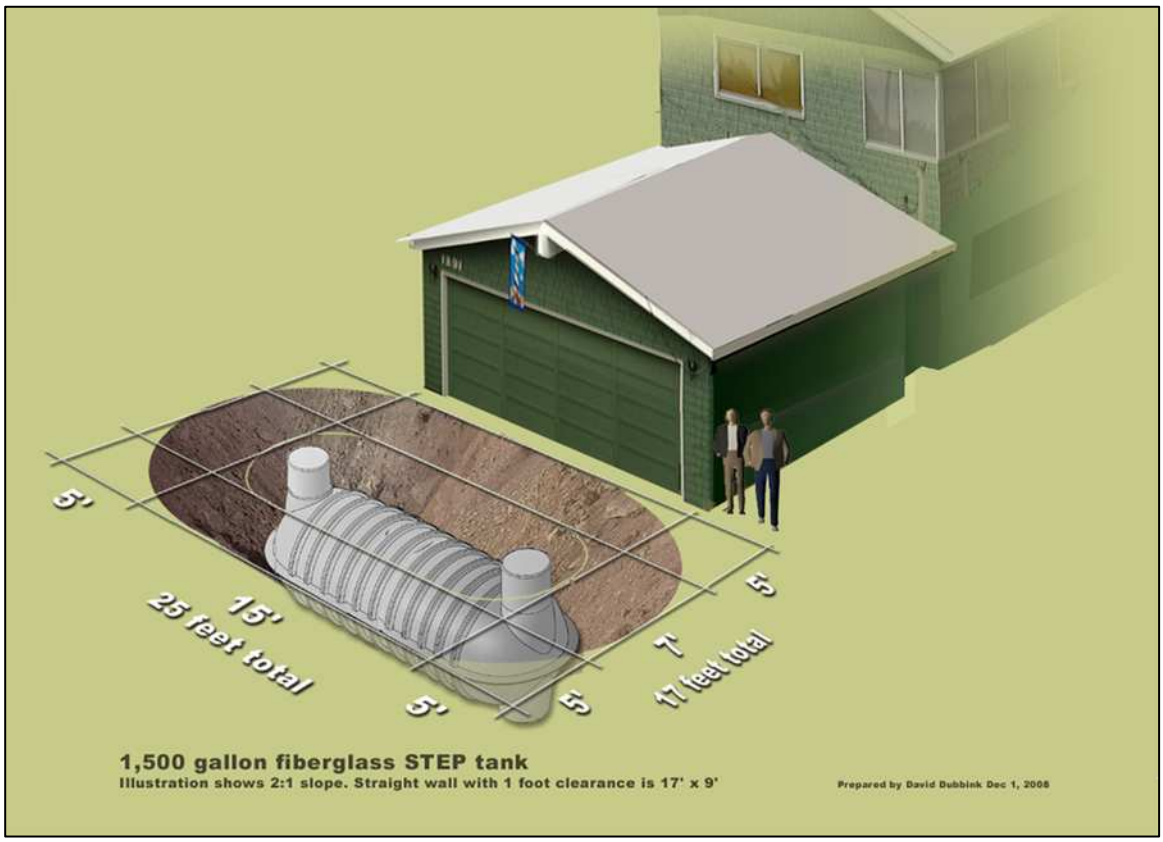


Figure 2: STEP Excavation

The DEIR notes that, when the excavations are made for STEP tanks, it will require the export of 15 cubic yards of material. The DEIR doesn't say what happens to these three truckloads of material when they are hauled away. Given the front yard locations of half the septic systems in town, the excavated material will include the residue of leach fields and perhaps fragments of septic tanks that have remained in use until the moment of excavation. It will not be "clean" fill. The total quantity of removed material is over 70,000 cubic yards which is the equivalent of a football field piled four stories high. It might be noted that the DEIR says that the existing septic tanks will *not* be hauled away but be filled with sand or converted to graywater reservoirs. But this will not be possible on small lots since the STEP tanks excavations involve the entire front yard and would include the septic tank and its leach field. Is the question of whether there are significant environmental effects involving the hauling and disposal of the leechfiled and septic tank remnants being overlooked?

Traffic:

The traffic analysis by Associated Traffic Engineers (ATE) makes the mistaken assumption that 9th and 10th Streets are through connections from Los Osos Valley Road to Santa Ysabel. The traffic consultants should verify that a change in their assumptions about the 9th and 10th Street configurations does not change the conclusion that the mode

of wastewater collection or the treatment method has a less than significant impact on roadway congestion.

The ATE study includes a very brief discussion of traffic problems experienced during the construction period. The discussion of traffic impacts in the main DEIR adds information on the numbers of vehicle movements associated the construction phase of the various projects. The numbers are taken from the Air Quality analysis and were not part of the ATE traffic study.

While the numbers of vehicles may not be consequential in terms of impacts on level of service there are other qualities of traffic that might pose concerns.

- There could be concentrations of truck traffic during construction, such as hauling rock to the Broderson site.
- There could be localized air quality issues.
- Safety could be a problem at intersections that lack turning lanes for big trucks.
- The extra trucks increase noise. (Heavy trucks have the same acoustic impact as ten or more cars).

It would be useful to identify where these qualitative impacts might occur and insure that the proposed mitigations are adequate

Project Timing

The DEIR assumes that construction of the wastewater collection and treatment system will be concluded in two years. There is no consideration of what may be a significant timing problem regarding installation of a STEP system.

There are two STEP tank placement scenarios. Installation can begin at any time as long as the STEP tank is placed outside of the area presently occupied by a septic tank and its drain field. Similarly, work can start immediately if the STEP tank can be installed in the same position as the septic tank. As long as the drain field remains functional, the STEP tank can be used as a conventional septic tank until the collection and treatment system is in place.

But there is another condition. If the STEP tank occupies any territory that is within the drain field, installation must be delayed until after the collection and treatment systems are operational. Several thousand parcels may be of this type and it will take time to make the installations. Given a schedule where 10 tanks are installed every working day it could be as much as an additional year before all tanks are in place and connected. The numbers of tank installations that might have to be deferred should be calculated and, if there is an impact on project scheduling, this should be stated.

The differences in timing also affect the pattern of neighborhood disruption since it is likely that the tank installation work would need to be done in two passes, first installing tanks where the leachfields can be maintained and a second phase to install the tanks after the wastewater treatment facility was operational. The two phase installation program could impact the DEIR's assumptions concerning traffic disruption and air quality since these are predicated on a two year completion schedule.

There is also an issue related to disturbance of cultural resources. This is a significant concern with both the gravity and STEP systems. The adopted construction strategy for the gravity system was to shift excavations to backup worksites if cultural materials were encountered. This concept works for STEP tank installations too but there is a complicating factor. What is the mitigation strategy if cultural materials are encountered during STEP tank excavations after an existing septic tank and drain field is disabled? It would seem that the residence would need to be vacated for the duration of the archeological excavations.

Environmental Justice

California law defines Environmental Justice as "the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (Government Code Section 65040.12 and Public Resources Code Section 72000).

The proposed payment structure for the wastewater system imposes uniform fees for service without any consideration of the differential impact of the fees on different population groups. The fees will be particularly burdensome on lower income families.

Data from the US Census illustrates some of the issues. 100% of Hispanic homeowners have a mortgage. By contrast, almost a third (29%) of non-Hispanic homeowners don't have a mortgage. Because of this disparity, the monthly burden of ownership costs (as a percentage of household income) for Hispanics are already 2-5% higher than monthly costs for non-Hispanics. And in Los Osos, even home ownership is not a guarantee of financial security. 142 homeowners reported incomes that were below the poverty line.

It is recommended that renters pay no more than 35% of their income for housing expenses. The percent of Los Osos renters paying more than this limit is quite high; 41%. A surprising 27% percent are paying rent that is more than 50% of their household income. In this setting, an equal distribution of costs does not result in an equal impact. The argument that the project provides proportionate benefit to residents doesn't apply to the public works project. The town is already served by septic tanks that, on an individual basis, are satisfactory. The wastewater treatment facility is required to meet state water quality objectives which are being implemented through "enforcement" actions by the Water Quality Control Board. Relief from fines is the major "benefit" to residents.

Additionally, all of the wastewater treatment proposals include a component referred to as "homeowner responsibility". These are presented in the Fine Screening Report and the DEIR in the form of averages but individual homeowners will not be experiencing averaged impacts and costs. The distribution of costs is irregular and highly site specific.

There are likely to be economic inequalities in that on-site costs will be proportionately higher for small lots than for large ones. This is particularly true for owners of small lots where STEP tanks need to be strengthened so that they can be placed under driveways. (The illustration in Figure 2 is based on a photo of an actual structure where the entire

"yard" is currently used as a driveway). The standard fiberglass tank STEP is not traffic rated and it has two access hatches that protrude above ground. The smaller the lot, the greater the likelihood that tank installation will require extraordinary construction expense. The owners (or renters) of the community's more modest homes will end up paying more for compliance than the owners of larger properties. This is not "fair treatment" under California's definition of Environmental Justice.

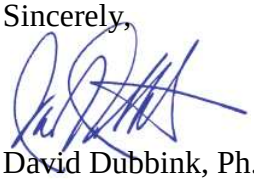
There are few people who have reviewed the Los Osos situation who do not appreciate the fact that there are profound social issues related to displacement of lower income residents and inequitable assignments of costs. The question is how the DEIR could conclude that there are not significant environmental justice issues. The DEIR examines the environmental equity question using GIS technology applied at a broad and generalized scale (circles drawn on a map). This technology might be applicable to large scale federal projects but the differential costs of compliance with environmental regulation are diluted by averaging. Considered at the parcel and household level it is clear that there are problems of inequity. The section of the DEIR addressing environmental justice issues needs to be overhauled with suitably scaled analysis and appropriate conclusions and proposed remedies.

Number of STEP Tanks?
The Fine Screening report said there are 4769 septic tanks to be replaced. The DEIR says the number is 4679 (there are two places where it uses the 4769 figure). The Project Description in Appendix B gives the Fine Screening Report's 4769 figure.

Being a bit inconsistent on the number isn't catastrophic but it would be helpful to improve on the impressionistic data taken from the Fine Screening report. Reference is made to percentages of front and rear yard installations but a the mapping of septic tanks shows side yard and center courtyard installations too. Also, what happens at the many locations where a 1,500 gallon household tank isn't sufficient? The service area includes multiple unit residential buildings, commercial complexes and several schools. Would consideration of the differing location and scale of some of the on-site treatment systems change anything?

Conclusion
Your attention to these questions is appreciated. The DEIR is encyclopedic and certainly sufficient to withstand legal challenge. In terms of breadth of topics, everything seems covered. The issues arise where the DEIR's rather generic format fails to address specific local issues. I am hopeful that questions posed in this discussion along with the suggested mitigations for identified problems will be helpful in refining the project proposals and in addressing environmental issues.

Sincerely,



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