Midcoast Community Council
An elected Municipal Advisory Council to the
San Mateo County Board of Supervisors
Serving 12,000 coastal residents
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16 August 1999

Mary Griffin, President, and Members of the
San Mateo County Board of Supervisors
455 County Center
Redwood City, CA 94063

re: **Questions for CCWD Independent Engineering Review**

Dear President Griffin and Members of the Board:

At our regularly scheduled meeting on 11 August 1999, the Midcoast Community Council voted (5 yes, 0 no, 2 absent) to forward the following questions to the independent engineering consultant that your Honorable Board decided to engage at your meeting on August 3, 1999. These questions regard the appropriate size and capacity of the proposed El Granada Water Transmission Pipeline Replacement Project (the Pipeline) appealed by the Coastside County Water District (CCWD, or District).

We remain concerned that the scope of the Pipeline, as defined in the Revised Environmental Initial Study, ignores the other essential components that are required to enable the Pipeline to operate as proposed. These include additional water sources, treatment facilities, pump stations, and transmission components. The Pipeline is clearly a part of a larger overall master plan, and the overall environmental effects (including potential growth inducement) of that overall plan remain, as far as we can tell, unanalyzed. Our prior letter (dated 3 August 1999) contained a detailed enumeration of Local Coastal Program (LCP) policies that CCWD has not addressed in sufficient detail. Your charge to your Planning Division to carefully re-evaluate those environmental and policy impacts needs to be completed thoroughly by staff.

Finally, several Council members have expressed concern about the financing model for this Pipeline project. Strictly speaking, the financing appears to be a separate issue from whether the Pipeline should receive a Coastal Development Permit. However, there are clear LCP policies intended to phase development of infrastructure as the community moves toward buildout, and in particular to ensure that the costs of that infrastructure are borne appropriately by either current users or new development, depending on the beneficiaries of any given project. Those policies bring into scope the financing model, to show that the costs are shared in a compliant manner.

Members of the Midcoast Community Council would be pleased to meet with your independent engineer, perhaps at the same time he or she is meeting with CCWD representatives, to discuss some of our concerns and understand the engineering reasoning behind the proposal. We are also available to discuss the environmental, policy, and financial issues. We are eager to see a safe and reliable water supply for our community, appropriately sized for the customers it is intended to serve, and financed so that those who benefit from the facilities are responsible for paying for it.

Sincerely yours,

Paul Perkovic

Paul Perkovic, Chair

Questions for Consideration by the Engineering Consultant

Note: In the following sections, "Pipeline" refers to the El Granada Water Transmission Pipeline Replacement Project specifically, whereas "pipeline" is used for general questions or issues about water pipelines, not necessarily this specific project. "CCWD" or "District" refers to the Coastside County Water District. Any documents referenced are incorporated by reference and should already be part of the administrative review record. If you need a copy of any document not already submitted, please contact either CCWD or the Midcoast Community Council.

1. What are the District's engineering standards for acceptable levels of service that are used in designing projects? For example, it is generally not economically feasible to design a water supply system that can assure meeting 100% of user demand 100% of the time, with absolute certainty, because there are always circumstances beyond human control that could cause interruptions. However, there should be some target engineering design parameters, such as meeting 100% of the demand at least 95% of the time, and 80% of the demand the rest of the time. Also, is it District policy to match the capabilities of each element of the water supply and distribution system to the desired acceptable service reliability levels? Just as a chain is only as strong as its weakest link, it does not make economic sense to over-engineer one component of the system (at resulting higher cost), when other components cannot meet the same demand expectations. (If the District does not have a formal adopted service assurance policy, we might note that it appears to tolerate a policy of meeting 100% of the demand approximately 65% of the time, and at least 75% of the demand the rest of the time. This estimate is based on historical periods in which either voluntary or mandatory water rationing was necessary for District customers.)

2. We understand that, unlike electrical utilities (which must match instantaneous power generation to instantaneous demand levels), water utilities typically meet peak instantaneous demands by a combination of water production and storage. Clearly, it would not make sense to size the Pipeline for peak instantaneous demand, such as might occur when 5,000 households all flush their (low-flow) toilets during the same minute, producing a peak demand of approximately 7,500 gpm. (This could be the result of an external synchronizing event, e.g., a commercial during the Super Bowl, a break during impeachment hearings, the end of an MCTV cable broadcast of an exciting Board of Supervisors meeting, etc.) Please confirm that the storage and distribution system can meet these very-short-duration peaks, as well as longer-duration fire flow requirements, from existing storage. Is it correct that the Pipeline is intended to resupply the storage tanks, and not provide instantaneous peak demand flows?

3. CCWD documents indicate that "Peak Day Demand" is approximately 180% of "Average Day Demand," and also that "Peak Month Demand" is approximately 130% of "Average Month Demand." Presumably, the Peak Day Demand periods usually occur in the Peak Month, so the Pipeline must be capable of transporting, over the Peak Month, a total of 130% of the Average Month consumption, with variations in daily use being met from storage tanks. From Table 7 in CCWD's Water Supply Evaluation Calendar Year Reports, we see that typical Peak Day Demand periods generally extend over no more than three or four days. Please confirm that for a transmission pipeline such as that proposed, the appropriate peaking factor should be 130%, not 180%. (Note: In reviewing CCWD Peak Month data, please be sure to use actual water production figures, which include system losses, rather than monthly water sales figures.) If the 130% Peak Month factor is too low (because storage might be reduced too much during the Peak Day usage period), and the 180% Peak Day factor is too high (because it ignores the availability of storage), what is an appropriate engineering factor to use?

4. According to CCWD production data, the Denniston Water Treatment Plant (WTP), using either surface water from Denniston Creek, or groundwater from the Denniston Well Field, produces approximately 25% to 35% of CCWD's total water supply. The sizing calculations for the Pipeline assume that *not a single drop of water* will be available from the Denniston WTP. Therefore, it is argued, all water to serve the northern portion of Half Moon Bay and the Miramar and El Granada communities must be supplied from the south, from the Crystal Springs project, through the proposed Pipeline. *This is a critical assumption that drives the computation of the pipe size.* Please review the historical record to determine the longest consecutive period when the Denniston WTP produced no water. If the scenario of "no water from Denniston" has no historical precedent, please evaluate how likely that situation is, compared, for instance, to complete loss of the Crystal Springs supply as a result of a pipeline rupture in a major earthquake.

5. The CCWD application suggests that during some periods of the year, the Pipeline will be used to transport water from the Denniston supply south to meet the needs of Half Moon Bay customers. It would seem that the maximum amount of water that needs to be transported south would be the Peak Day production capacity of the Denniston WTP, minus the Average Day (or Minimum Day) consumption in the northern part of the CCWD service area. Is there any reason to believe that, even if the Denniston supply were significantly increased, there would actually be any excess water that must be transported south through the Pipeline? If there is a plan to significantly increase the Denniston supply, that would appear to be an integral part of the justification for the current Pipeline, and therefore must be considered as part of the project under California Environmental Quality Act guidelines; otherwise, CCWD would be "piecemealing" the project. Are there any known plans to increase the Denniston supply that justify the Pipeline size?

6. The population served by the Pipeline is accustomed to receiving only 75% of their desired water demands for long periods of time (on the order of years, e.g., January 1990 through April 1993). If there should be an emergency interruption of the Denniston supply, how likely is it to last for more than 3 years? Is this a reasonable engineering contingency to use in sizing a Pipeline?

7. Water shortages as a consequence of a drought are planned, expected inconveniences to District customers. Under conditions of a publicized water emergency, demand can be reduced by 25% through mandatory or voluntary rationing. Therefore, assuming that a drought eliminates all water from the Denniston source for an extended period, the Pipeline may be required to transport only 75% of the normal Peak Month Demand (which is 130% of Average Month), e.g., at most 104% of Average Month Demand during normal rainfall periods. Is this a reasonable and plausible "worst likely case" scenario that should be used in sizing the Pipeline? If not, what is reasonable?

8. According to CCWD's own submission, the proposed Pipeline has the capacity to meet 100% of the Average Day Demand of the entire northern part of the service area, at full Local Coastal Program (LCP) buildout, *without utilizing any water from the Denniston source*. Based on the points above, it seems that the proposed 16" diameter replacement Pipeline is larger than needed. For the current CCWD customers and committed connection holders (Crystal Springs Phase I project connections), and a realistic production expectation from the Denniston WTP, what is the water deficit that must be met from the Crystal Springs or other sources south of the Pipeline? Given the District's desire to permit gravity flow from the Carter Hill Storage Tanks to the Granada Storage Tanks through the Pipeline, what is the minimum diameter that would accommodate the current and committed connections, without need for pumping? What is the additional capacity that could be met by retaining the existing Frenchman's Creek Pump Station, for use on a standby or emergency basis during peak demand periods? (This analysis will result in gallons per minute or gallons per day capacity figures under the different scenarios.)

9. What is the actual population that could be served under normal circumstances, with the Denniston WTP operating at its normal capacity, and the proposed 16" Pipeline transporting the maximum possible amount of water north from the Crystal Springs supply? Given CCWD's historic policy of selling about 133% of the connections that can be assured a reliable supply of water, what is the resulting number of connections that could be made available to the community under normal flow conditions (e.g., given high development pressure several years after a drought has become only a distant memory)?

10. Without questioning the analysis of the County's LCP and the City of Half Moon Bay's Land Use Plan (LUP), let us stipulate for the sake of argument that those population and priority use figures are accurate. What is the minimum diameter Pipeline that would accommodate full build-out, under the normal operating situation where the Denniston supply provides 25% to 35% of the District's total water needs (e.g., perhaps 50% to 70% of the water need in the area north of the Pipeline)? That is, what is the Pipeline size needed to supply Crystal Springs or other water to the northern portion of the District's service area, to augment the Denniston supply (still assuming that the Denniston supply is not increased)? If the Peak Day or Peak Month computations would suggest a larger diameter pipeline for gravity flow, what is the economic trade-off in pumping for a few days each year to increase the flow rate when needed, rather than increasing the diameter of the entire Pipeline? If the Frenchman's Creek Pump Station already exists and can be utilized for a few days each year, on average, while utilizing a smaller diameter Pipeline, some of the growth-inducing concerns of the community can be laid to rest.

11. The entire Crystal Springs supply comes over Cahill Ridge through a pipeline with a maximum diameter of 18". If that were the entire water source available to CCWD (e.g., Denniston is out of operation for some reason), why would it require a 24" pipeline to deliver just the portion of that water supply used in the northern half of the CCWD service area? This was suggested by CCWD testimony to the Board of Supervisors. Their visual presentation of a 24" cutout as the necessary Full Build-out pipeline diameter seems misleading. Please evaluate the accuracy of this representation from an engineering perspective.

12. The CCWD engineer asserts that it is good engineering practice to design water transmission systems with redundant pipelines, and the application suggests that the 16" proposed Pipeline diameter will result in a later parallel pipeline providing this desirable redundancy. Where, in the entire Crystal Springs Project plan (including infrastructure and transmission pipeline upgrades sufficient to carry the full LCP and LUP demands), is there any evidence of planning for parallel or redundant pipelines? The Crystal Springs Pipeline itself is a single pipeline, with no redundancy. The Carter Hill Pipeline appears to be a single 24" pipeline. The Main Street Pipeline Replacement Project appears to be a single pipeline. The El Granada Water Transmission Pipeline Replacement Project appears to be a single pipeline. There is no evidence in the record that CCWD ever intends to build a parallel, redundant pipeline in accord with good engineering practice. Please evaluate the likelihood that the proposed Pipeline is oversized and will therefore discourage investment in a parallel transmission pipeline. Please indicate the engineering consequences of a single point of failure in a water utility distribution system. Once a Pipeline is in the ground that can be pumped to meet actual build-out needs, what is the overriding public health and safety justification that will ensure that a parallel, redundant pipeline is ever built? How will CCWD justify this cost to its customers? What is the cost to the community of Pipeline failure?

13. Electrical utilities offer "interruptible" service at a reduced rate. Has the District considered using free market mechanisms to reduce Peak Day and Peak Month demands, e.g., by implementing a Peak Usage Surcharge when a customer uses more than the average consumption? The base-level usage components of the entire water supply, treatment, and distribution system are fully utilized

most of the time; additional equipment, storage tanks, pipelines, etc., to meet peak demands has a high marginal cost since the capital investment should be amortized over a small period of operation. There is a very plausible cost-accounting justification for high peak period pricing, and some water districts or utilities have used differential pricing to encourage conservation during droughts. A similar economic model could help reduce peak demands within the CCWD service area. Can you offer engineering insights into the effectiveness of differential pricing schemes in other water utility districts? How much can pricing incentives reduce the Peak Day Demand?

14. At this time, CCWD has the El Granada Water Transmission Pipeline Replacement Project before the County for a Coastal Development Permit, alleging that the existing 10" pipeline is already at capacity. At the same time, the District has furnished assurances to a private developer for the proposed Moss Beach Affordable Housing Project that there is more than enough water to serve that project. This includes providing 1,500 gpm fire flows and dual (e.g., redundant) 12" water transmission pipelines from the existing northern end of CCWD's service area approximately 2.5 miles north into Moss Beach. Please provide an engineering explanation of how a system that is so severely over-committed that it requires a 4-fold flow increase (from 350 gpm to 1,596 gpm) can, at the same time, have plenty of capacity available right now to serve this proposed project.

15. The investor-owned utility that serves the Montara / Moss Beach communities (Citizens Water Resources, CWR) recently discovered contamination by methyl tertiary butyl ether (MTBE) in two of its water production wells, potentially reducing CWR's already limited water capacity by as much as 120 gpm. At the time, CCWD considered a short-term, emergency arrangement with CWR to transport water north to CWR's service area during the peak demand periods. Please provide an engineering explanation of how a system that is so severely over-committed that it requires a 4-fold flow increase (from 350 gpm to 1,596 gpm) can, at the same time, have plenty of transmission capacity available right now to make emergency water available to CWR.

16. The County's LCP includes a water allocation for future floriculture usage. To the extent that CCWD intends to provide capacity for future floriculture, please identify the parcels on which this floriculture might occur, and indicate that none of these parcels has already been counted in the residential analysis with the expectation that it would sprout houses rather than flowers.

Thank you for your time and effort in helping the community to understand the engineering requirements that determine an appropriate size for the El Granada Water Transmission Pipeline Project.