STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
895 Aerovista Place Suite 101
San Luis Obispo, CA 93401-7906

PUBLIC COMMENTS AND STAFF RESPONSE

Water Board staff received comments from:

1. Kari Fisher, California Farm Bureau. in a letter dated January 23, 2009
2. Justin Oldfield, California Cattelmen's Association in a letter dated January 23, 2009.
3. James Bogart, Grower-Shipper Association of Central California in a letter dated January 23, 2009.
4. Darlene Din, Agricultural Land Use Consultant, in a letter dated January 20, 2009.
5. Jacqueline Bretschneider, City of Gilroy, in a letter dated January 23, 2009.
6. Shawn and Jennifer Kuchta, S/K Cattle Co., in a letter dated January 21, 2009.
7. Jody Hall Esser, County of Santa Clara, in a letter dated January 23, 2009.
8. Greg Swett, San Benito County Farm Bureau, in a letter dated January 23, 2009.
9. Joeseph Morris, San Benito County Cattlemen's Association, in a letter dated January 22, 2009.
10. Allan Renz, AGCO Hay Company, in a letter dated January 22, 2009.
11. Richard Morris, Central Coast Rangeland Coalition, in an email dated January 23, 2009.
12. John Eade, The Ranch Company, in a fax dated January 21, 2009.
13. Charles W. Tobias, DVM, in a letter dated January 22, 2009.

Below are staff responses to these comments. All comments are direct transcriptions from the letters unless otherwise noted.

Comments and Responses – California Farm Bureau

Comment 1
….the proposed TMDL has not properly considered existing environmental conditions within the Pajaro River watershed that influence and effect fecal coliform levels, resulting in <u>improper reliance on inappropriate natural and baseline fecal coliform concentrations</u>….

Response to Comment 1

The Water Board is required to adopt TMDLs for waters that have been listed as impaired pursuant to Clean Water Act section 303(d). The TMDL must be based on the

best available information, even when there is uncertainty. Staff acknowledges that the ability to differentiate between controllable and natural sources is an uncertainty in these TMDLs. To address this issue, Staff has amended the project report to provide a more robust analysis of baseline environmental conditions, and an assessment of the potential relative load contribution of indicator bacteria from natural sources. Please refer to Appendix A, Attachment 4 of the Project Report. Based on the additional analyses, staff maintains that uncontrollable natural sources are not likely causing sustained and widespread exceedences of fecal coliform water quality objectives leading to impairment of the waterbodies in the project area. Consequently, Staff does not agree that the Basin Plan water quality objective for fecal coliform, set as the TMDL, represents "natural and baseline" fecal coliform concentrations. Staff acknowledges that our analyses do not preclude that background sources can periodically cause exceedences of the fecal coliform water quality objective. The Central Coast Water Quality Control Plan requires the Water Board to control controllable sources of pollution, whether or not natural sources contribute to exceedances of the water quality objective. Other measures can be taken to address and acknowledge the loading from natural sources (see paragraph below) but that does not preclude controlling controllable sources.

Staff notes that The Project Report, Section 12.2 states that "Responsible parties may also demonstrate that although water quality objectives are not being achieved in receiving waters, controllable sources of pathogens are not contributing to the exceedance. If this is the case, the Central Coast Water Board may re-evaluate the numeric target and allocations. For example, the Central Coast Water Board may pursue and approve a site-specific objective. The site-specific objective would be based on evidence that natural, or background sources alone were the cause of exceedances of the Basin Plan water quality objective for pathogen indicator organisms."

Comment 2 - California Farm Bureau

…..the proposed TMDL and basin plan amendment fails to provide a linkage between the implications of implementing the fecal coliform TMDL with current existing pollution prevention programs, regulatory programs, and future TMDLs. As a result, the TMDL can not reasonably ascertain whether it is possible to achieve the water quality objective given naturally occurring fecal coliform levels and sources in the watershed.

Response to Comment 2

Please see response to Comment 1. Additionally:

Staff acknowledges the array of voluntary efforts, land management programs, and educational programs that exist. However, implementation action adopted in a TMDL must be based on a regulatory mechanism that is already a part of the Basin Plan or the Clean Water Act, or that is proposed as an amendment to the Basin Plan simultaneous to the TMDLs and implementation plan. Compliance with this TMDL and the allocations

is to a large extent through currently existing regulatory programs and permits. Urban stormwater allocations will be implemented through NPDES permits, existing Waste Discharge Requirements are the mechanism that Sanitary Sewer Collection and Treatment jurisdictions will demonstrate compliance. Conversely, there is not a specific mechanism in place to regulate sources from livestock, or human fecal matter from private laterals. The proposed Wasted Discharge Prohibitions are simply the mechanisms that implements load allocation requirements for these sources. The Water Board cannot mandate or designate the specific types of actions necessary to reduce indicator bacteria loading, or to meet allocations, although the Board does adopt reporting requirements, and options for demonstrating compliance. Compliance does not necessarily require a pollution control plan to be developed. Options for compliance with the prohibition include submitting documentation demonstrating there are no discharges from fecal sources by livestock/domesticated that would contribute to exceedences of stream load allocations.

Comment 3- California Farm Bureau

"Account for variations in precipitation, hydrology, and land-use in simulating fecal coliform deposition in streams":

Response to Comment 3

Staff evaluated the potential impact of land use on indicator bacteria water conditions within the watershed. Staff concluded that there was no systematic evidence of a direct relationship between indicator bacteria concentrations in water bodies, and land use categories. (See Section 4.6 of the Project Report).

To address the public comment more broadly, Staff used a technical approach for developing load allocations for the TMDL based on observed data. Staff used the observed data to develop a concentration-based TMDL and concentration-based allocations. Observed data included water quality monitoring data, land use data, field inspection, information from individuals and public agencies, photo documentation in the field, etc. Staff assigned wasteload allocations and load allocations to responsible parties based on observed data and other lines of evidence presented in the project report, and based on Water Quality Objectives from the Basin Plan.

Staff acknowledges that the use of observed data in conjunction with hydrologic data and flow data to simulate predicted loads is a method that quantitatively predicts fecal coliform loading from various sources, and load allocations may be developed accordingly. Staff also acknowledges that accounting for different flow conditions might take into account dilution effects, thereby potentially allowing a greater load allocation. This requires a scope and quantity of data that is not available for the Pajaro River Watershed.

According to Federal regulations at 40 CFR 130.2(g), "load allocations are best estimates of the loading, <u>which may range from reasonably accurate estimates to gross</u>

allotments, depending on the availability of data and appropriate techniques for predicting the loading; wherever possible natural and NPS loads should be distinguished."

The insufficient amount and limited geographic distribution of flow data in the project area, precludes a reasonably accurate prediction of load allocations based on hydrologic conditions. The watershed is over 1,200 square miles. The geographically sparse flow data which exists would only be representative of observed fecal coliform loading conditions for a very small proportion of the entire Pajaro River Watershed. This is problematic because observed bacteria loads (monitoring data) near a stream gage are only representative of the baseline conditions of a relatively small portion of drainage catchments upstream of the flow gage; that is to say it is representative at the subwatershed scale. This is because bacteria flowing from the upper reaches of a large watershed (on the scale of hundreds of square miles) may have little impact on the waterbody downstream, due to die off and attenuation. Consequently, it would not be appropriate to extrapolate observed bacteria loads from a gage and monitoring site located at the lower end of a large watershed throughout the upstream reaches of that watershed,. Staff acknowledges that it is conceivably possible to estimate hydrologic flow throughout the watershed by extrapolating existing flow gage data into watersheds that are not currently flow-gaged using simple empirical methods like the Drainage Area Ratio Method. But the level of error and uncertainty in extrapolating flows and predicting loads into ungaged streams would likely be significant, and error-prone.

Staff proposes a concentration-based TMDL that is independent of flow and precipitation conditions. The U.S. Environmental Protection Agency recognizes concentration-based TMDLs (USEPA "Protocol for Developing Pathogen TMDLs, 2001) in accordance with 40 CFR 130.2(i) which states: "TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measure."

Expressing the TMDL as a concentration equal to the water quality objective ensures that the water quality objective will be met under all flow and loading conditions. In the absence of adequate hydrologic flow data, establishment of a concentration-based, rather than a load-based TMDL has the advantage of eliminating the need to conduct a complex and potentially error prone analysis to link loads and expected fecal coliform densities (concentrations). A flow-load duration analysis would inevitably involve a great deal of uncertainty, with no increased water quality benefit. Further, historic or current flow data may not be representative of future conditions in a complex and highly managed hydrologic system such as the Pajaro watershed. Flows within the watershed may fluctuate on a non-seasonal basis due to intensive water management practices. A concentration-based approach for these TMDLs, simply allocates pollutant loads to sources based upon the indicator bacteria water quality standard. Unlike mass-based load allocations, the concentration-based load allocations do not add up to equal the TMDLs, since the concentrations of individual pollution sources are not additive. Rather, in order to achieve the concentration-based TMDL, it is simply necessary to assure that each source meets the concentration-based overall load allocation.

Comment 4 - California Farm Bureau

Rely on up-to-date reasonably sound science in order to develop numerical targets….

Response to Comment 4
Staff interprets this comment to be a reference to the water quality objective for fecal coliform, since the numeric targets are equal to the water quality objective. Staff acknowledges that there is scientific uncertainty as to which fecal indicator bacteria (fecal coliform, *E. coli*, Enterococcus) are better indicators of pathogens. Staff recognized that USEPA has recommended *E. coli* be used as the preferred indicator bacteria. Fecal coliform continues to be used in many states and jurisdictions, and USEPA continues to approve pathogen TMDLs which used fecal coliform as an indicator bacteria. Fecal coliform is used as an indicator for pathogens in this TMDL because 1) the Central Coast Basin Plan identifies current water quality objectives for fecal coliform; and 2) based on staff consultation with a number of scientists (including Kenneth Schiff of the Southern California Coastal Water Research Project Authority) and State Water Resourced Control Board staff, and information from workshop findings and scientific literature. Additionally, our scientific peer reviewer, Dr. Stefan Wuertz, Professor of Environmental Engineering, UC Davis, reported that in the absence of actual pathogen data, the fecal coliform numeric target is reasonable to use. Fecal coliform is a conservative, or protective indicator of pathogens. Since the TMDL is set to protect beneficial uses, staff finds its use, in spite of some uncertainty, appropriate.

Comment 5 - California Farm Bureau

Estimate reasonable costs for compliance…. The proposed TMDL does not consider likely costs of compliance associated with implementation of best management practices, and fails to analyze and incorporate any necessary future measures that would need to be implemented to ensure compliance.

Response to Comment 5

As a result of comments on an earlier version, Staff amended the Project Report, Section 12, to provide for a broader and more comprehensive range of cost estimates associated with management practices. Cost estimates were tabulated from sources provided by the National Resources Conservation Service and U.S. Department of Agriculture. While it is possible to identify a discrete range or costs associated with implementing management practices, it is challenging and speculative to calculate total costs, or costs associated with future measures. This is in part, due to the uncertainty surrounding the number of facilities, ranches, farms, and private sewer laterals that will require implementation. Also, it is important to note that the Water Board cannot mandate or designate the specific types of on-site actions necessary to reduce indicator bacteria loading, or to meet allocations by the various responsible parties. Specific actions or management measure that are described or identified in the project report can only be suggestions or examples of actions that are known to be effective at reducing loading. Staff acknowledges that land owners and their collaborative partners

in the Resource Conservation Districts and other public and private entities, are in the best position to identify sound on-site management practices that will effectively mitigate or control pathogen loading to water bodies from livestock. The Proposed Waste Discharge Prohibition sets a load allocation goal, and identifies reporting requirements for owners and operators of lands containing domestic animals to demonstrate and report how they will achieve compliance with the load allocations and whether implementation is effective as planned.

Comment 6 - California Farm Bureau

Incorporate a phased implementation approach to allow for the interim evaluations of the proposed TMDL implementation while progressing toward compliance with water quality standards;

Response to Comment 6

Evaluation of implementation progress and adaptive measures are incorporated in the Project Report Section 12.2. Staff will review implementation actions and monitoring results every three years, and conclude if or whether changes or adjustments are needed to achieve the allocations. Also, responsible parties may also demonstrate that although water quality objectives are not being achieved in receiving waters, controllable sources of pathogens are not contributing to the exceedance. If this is the case, the Water Board may re-evaluate the numeric target and allocations. For example, the Water Board may pursue and approve a site-specific objective. The site-specific objective would be based on evidence that natural, or background sources alone were the cause of exceedances of the Basin Plan water quality objective for pathogen indicator organisms.

Comment 7 - California Farm Bureau

Prevent disproportionate impacts to specific industries

Response to Comment 7

Staff has endeavored to propose a TMDL that limits requirements to the minimum necessary to achieve water quality results. Staff also made a concerted effort to identify and propose requirements for any and all industries or responsible parties contributing or threatening to contribute fecal coliform to the waterbodies. Staff made a concerted effort in the proposed TMDL to limit the burden of monitoring and reporting, and built flexibility into the plan to allow Staff, and the responsible parties, to adapt monitoring and reporting requirements for optimal financial and informational value. Staff has endeavored to identify as many options as possible for responsible parties to demonstrate compliance with the proposed Basin Plan Amendment, while still achieving water quality results.

Comment 8 - California Farm Bureau

Assure that irrigated agriculture will not be included under the proposed definition and scope of the TMDL.

Response to Comment 8

Staff concluded in the project report that irrigated cropland was not a source contributing to exceedences of fecal coliform water quality objectives in the Pajaro River Watershed. The conclusion was based on the reported infrequency of manure application in the watershed, the CalFERT audit of composted chicken manure, the operational practices pertaining to field workers, and information provided by local organizations and individuals listed in Section 5 of the project report. Based on public comments received pertaining to this issue, Staff also amended the source analysis of the project report by adding additional findings which indicate that irrigated cropland in the project area does not appear to be a source of pathogen loading causing exceedance of water quality objectives to the project waterbodies. The project report amendment included a Monterey County Resources Conservation District report dated 2006, stating that application of raw manure to crop land has largely been phased out in the Central Coast region, and manure application data from the recently published 2007 Census of Agriculture from the U.S. Department of Agriculture's National Agricultural Statistics Service, which indicates that manure application on irrigated cropland in San Benito County, and the watershed more broadly, is negligible and inconsequential. As a result, the TMDL does not allocate a load to agriculture and no implementation is required of operators of irrigated lands.

Comment 9 – California Cattlemen's Association

…ranchers operating within the watershed have taken voluntary steps to address fecal coliform discharges from non-irrigated rangelands. The Final TMDL Project Report acknowledges the voluntary steps taken by ranchers to implement best management practices, however it fails to thoroughly discuss the contributions of such voluntary actions to meeting water quality objectives. Ranchers have been actively participating in educational short courses hosted by the University of California Cooperative Extension and participating in ongoing research to better enhance management practices that prevent or dramatically decrease fecal coliform discharge from rangelands. The adoption of this TMDL will hamper voluntary actions from continuing and discourage ranchers from working collaboratively with experts and Water Board staff to address water quality concerns without onerous or burdensome regulations.

Response to Comment 9

Staff acknowledges the work done, and measures taken by the California Cattlemen's Association, the Central Coast Rangeland Coalition, the County Farm Bureaus, the University of California Cooperative Extension, and others for research, educational courses, and implementation of rangeland management practices intended to improve

water quality. The Water Board strongly supports these activities and recommends that these efforts be continued.

The Water Board is required by the Federal Clean Water Act to adopt TMDLs for water bodies listed pursuant to Section 303(d) of the Clean Water Act and impaired water bodies. Staff anticipates that voluntary efforts and implementation measures currently underway may, in fact, result in achieving the goals of the TMDL and may be sufficient to demonstrate regulatory compliance with the proposed Basin Plan Amendment. The Proposed Waste Discharge Prohibition simply sets a load allocation goal, and identifies reporting requirements for owners and operators of lands containing domestic animals to demonstrate how they will achieve compliance with the load allocations, and whether implementation is effective. However, it is important to note that the Water Board cannot mandate or designate the specific types of on-site actions necessary to reduce indicator bacteria loading. Specific actions or management measures that are described or identified in the project report can only be suggestions or examples of actions that are known to be effective at reducing loading. Staff acknowledges that land owners and their collaborative partners in the Resource Conservation Districts and other public and private entities are in the best position to identify sound on-site management practices that are effective at reducing or controlling pathogen loading to water bodies from livestock. Consequently, voluntary or ongoing rangeland management practices and implementation actions have the potential to be effectively used by responsible parties to demonstrate compliance with the proposed load allocations for domestic animals. Also, compliance with the load allocations implies compliance with the Domestic Animal Waste Discharge Prohibition. Staff believes the Discharge Prohibition would be achievable as it affects the management of livestock and domestic farm animals for which there are various affordable land management, and livestock management options to control and/or treat runoff. In addition, compliance does not necessarily require a pollution control plan to be developed. Options for compliance with the prohibition include submitting documentation demonstrating there are no discharges from fecal sources by livestock/domesticated that would contribute to exceedences of stream load allocations.

Comment 10 – California Cattlemen's Association

…most fecal coliforms originating from cattle or rangelands are not harmful to human health. The proposed decision would regulate all fecal coliform constituents but frequently mentions the TMDL is necessary to protect human health. E. coli O157:H7, which has been noted as the responsible contaminant for the outbreak in September of 2006, can be addressed without regulating all forms of fecal coliforms. Better indicators and genetic fingerprinting practices should be employed to determine E. coli O157:H7 strains and address them appropriately rather than assuming all samples of fecal are present with E. coli O157:H7.

Response to Comment 10

Staff concurs that the risk to human health from pathogens shed from cattle is considerably less than the risk of pathogens in human fecal material. This is why the load allocations for domestic animal discharges are significantly different than the load allocation for discharges of human fecal material. The discharge prohibition for human fecal material is zero. For domestic animals, the load allocation is set at the water quality objective for fecal coliform.

While the risk to human health from pathogens associated with livestock waste is considerably less than from human fecal material, it is widely demonstrated in the literature, and recognized by Federal and State regulatory agencies that domestic animal waste is indeed a source of pathogen loading to waterbodies that pose a potential health risk to humans.

Finally, the Water Board does not assume that all samples of fecal coliform are present with E. coli O157:H7. E. Coli O157:H7 is simply one type of pathogen associated with domestic animal waste. Fecal coliform are used as indicator bacteria to assess the potential presence of pathogens. Fecal coliform do not conclusively prove that pathogens are present. Water quality monitoring for pathogens themselves is not feasible in the context of TMDL implementation. Quantitative data on pathogens is not available on a routine basis. The Basin Plan establishes water quality objectives for Fecal Coliform indicator bacteria for protection of beneficial uses of water bodies from the potential impairment by pathogens.

Comment 11 - California Cattlemen's Association

…the Final TMDL Project Report references the report released by the California Department of Health and Human Services in 2007 regarding the E. coli O157:H7 outbreak in Salina in September of 2006. It should be noted that the report could not definitively determine the source of the strain, but findings in the report did indicate the most probably source was local wildlife. Regulatory actions in the TMDL will be unable to control E. coli O157:H7 contributed by wildlife but instead will place blanket regulatory burdens on cattle ranchers whether or not E. coli O157:H7 is actually present in livestock feces.

Response to Comment 11

Staff amended the Project Report to reflect the conclusions stated in the Executive Summary of the Final CalFERT report "Investigation of an *Escherichia coli* O157:H7 Oubreak Associated with Dole Pre-Packaged Spinach, dated March 2007.

E. coli O157:H7 is one possible pathogen livestock may shed that enters waterbodies, but it is not the only pathogen that livestock can shed that constitutes a possible risk to human health. Fecal Coliform is used as an indicator for a wide range of pathogens. There is widespread scientific agreement that pathogen loading from livestock to

waterbodies is a concern. Staff also acknowledges there is a range of scientific conclusions regarding the exact nature and scope of the potential threat to human health from these sources of fecal material. Staff acknowledges that the overwhelming majority of large-scale documented outbreaks from waterborne sources affecting humans do not come from agricultural, rangeland, or livestock sources. However, the broad scientific and regulatory consensus is that because of the large amount of fecal material produced in watersheds characterized by agricultural and rangeland land use with substantial quantities of livestock and farm animals, the potential exists for contamination of water with pathogens from domestic animal fecal material in these watersheds, warranting a proactive approach for reducing this source in watersheds. Scientific literature also broadly suggests that application of sound agricultural, rangeland, and livestock management practices significantly reduce the opportunity for introduction of pathogens into the watershed.

Staff acknowledges that uncontrollable sources (wildlife) of fecal coliform are a source of indicator bacteria loading to water bodies, and a source of pathogens. With respect to background loading to streams in the watershed, please also see Response to Comment 1.

Comment 12 - California Cattlemen's Association

….the Final TMDL Project Report provides an inaccurate and poorly constructed cost estimate which omits various compliance and indirect costs. The current estimate lacks a realistic price range for costs associated with inspection and monitoring, and depending on what mode of implementation is used, costs could be quite high for individual landowners. In addition, the current estimate also lacks financial burdens placed on ranchers for lost forage as a result of constructing livestock exclusion barriers. Depending on the situation, additional fences or exclusion barriers may exclude access to available forage, and during the current drought, a loss of any forage may present an unacceptable financial burden. The cost estimate also fails to provide current information relative to labor and material costs and references sources published in 1993. CCA requests Regional Board staff revise the current cost estimate to reflect realistic direct and indirect costs of TMDL implementation to be provided to senior staff and board members prior to the March hearing.

Response to Comment 12

Staff amended the Project Report, Section 12, to provide for a broader and more comprehensive range of cost estimates associated with management practices. Cost estimates were tabulated from sources provided by the National Resources Conservation Service and U.S. Department of Agriculture.

Please note, the proposed Basin Plan Amendment does not explicitly require installation of fences, exclusion barriers, or mandates for other specific structural management practices. It does require implementation of practices that are effective at reducing bacteria discharges from livestock to meet the TMDL.

Comment 13 - California Cattlemen's Association

…the Regional Board ought to make every available effort to collaborate with local producers and University of California Cooperative Extension livestock advisors to determine the best implementation action should the TMDL be adopted as presented. The implementation framework should clarify that ranchers are the best managers for their land and should be provided the flexibility to address potential discharges as appropriate.

Response to Comment 13

Staff acknowledges that land owners and their collaborative partners in the Resource Conservation Districts and other public and private entities, are in the best position to identify sound on-site management practices that are effective at controlling indicator bacteria loading to water bodies from livestock and farm animals to meet the TMDL.

Staff has left the implementation language unchanged with regard to Comment 13. Staff has endeavored to limit requirements to the minimum necessary to achieve water quality results. Staff made a concerted effort to propose a TMDL that limits the burden of monitoring and reporting, and built flexibility into the plan to allow Staff and the responsible parties to adapt monitoring and reporting requirements for optimal financial and informational value. Staff has endeavored to identify as many options as possible for responsible parties to demonstrate compliance with the proposed Basin Plan Amendment, while still achieving water quality results.

Please see Response to Comment 9 for additional relevant information.

Comment 14 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade); addresses comment by Charles W. Tobias

Fecal coliforms reasonably correlate with human illness risks only when human fecal coliforms are present in surface waters…..Fecal coliforms are not recommended as a water recreational health risk indicator. The use of fecal coliforms as the pathogen and health risk indicator in the proposed TMDL and Basin Plan does not reflect the fact that the original study establishing the fecal coliform criterion was significantly flawed. Since 1986, the USEPA has specifically recommended that fecal coliforms not be used to establish bacterial water quality objectives. The Basin Plan should have been amended in prior review periods to incorporate a more accurate and reasonable health risk water quality objective consistent with USEPA and other relevant information.

Response to Comment 14

Staff acknowledges that there is scientific uncertainty at to which of traditionally used fecal indicator bacteria (fecal coliform, E. Coli, Enterococcus) are better indicators of

pathogens. Staff recognizes that USEPA has recommended E. Coli be used as the preferred indicator bacteria. The State is currently engaged in the revision of fecal indicator bacteria standards; the revisions are intended to apply across the State. If approved, the new standards will likely supersede current fecal coliform standards in the Basin Plan, resulting in a revision of the proposed TMDLs and allocations consistent with the new standards.

Please see Response to Comment 4, for further information.

Also, please note that the Water Board may revise the numeric targets and allocations for adopted TMDLs in the future, should the new bacteria standards be established.

Comment 15 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

Fecal coliforms do not significantly correlate with infectious disease risks.
Studies completed since the NTAC Report have demonstrated that there is a poor correlation between fecal coliforms in a water body and pathogens that can cause human illness. A 2002 study concluded that fecal coliform measures do not protect public health because there is no clear relationship between the presence of pathogens and the concentration or presence of fecal coliforms……. The best available scientific evidence shows that no single water quality indicator can sufficiently protect human health, and that specific analyses of particular watersheds are required to develop appropriate protective measures. The proposed TMDL unreasonably relies on only one indicator (fecal coliforms) that has not been demonstrated to correlate with human health risks related to water contact recreation.

Response to Comment 15

Please refer to Response to comment 14 and 11.

Comment 16 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

Fecal coliforms from birds and animals do not correlate with human health risks, and almost all Pajaro River fecal bacteria are contributed by birds and animals. Virtually all studies that have shown a correlation between waterborne human health risks and fecal coliforms were conducted at locations where human sewage was the predominant contamination source

The Central Coast Water Board relied on the results of studies conducted for the Watsonville Slough Pathogen TMDL (Central Coast Water Board, 2005) and the Morro Bay Pathogen TMDL (Central Coast Water Board, 2002) to develop the proposed TMDL. The Watsonville Slough TMDL study found that human sources accounted for a maximum of only 2% to 3% of all measured fecal coliforms and that non-human sources accounted for 99% (in dry weather) and 97% (in wet weather) of all measured fecal

coliforms. The Morro Bay TMDL indicated that human sources were responsible for between 13% and 19% of the total fecal coliforms, but these results reflect the fact that the Los Osos community adjacent to Morro Bay does not have a centralized wastewater treatment plant and relies on individual septic systems. Human fecal contamination is known to exist in the Morro Bay watershed analyzed in the study. As discussed below, the Pajaro River watershed is not subject to similar forms of human fecal contamination and the Morro Bay results cannot be used to extrapolate conditions in the Pajaro River watershed.

The Central Coast Water Board also completed a study in support of the Soquel Creek Pathogen TMDL (Central Coast Water Board 2007) that was not referenced in the background materials for the proposed TMDL. The Soquel Creek TMDL showed that humans contributed between 4% and 6% of the measured fecal coliforms and that non-human sources constituted the remainder of the measured fecal coliforms. These results are consistent with the findings reported in the Watsonville Slough study.

The extent to which fecal coliforms from human sources occur in the Pajaro River watershed is almost certainly comparable to, if not lower than, the results reported by the Central Coast Regional Board in the Watsonville Slough and Soquel Creek TMDL studies. Unlike Morro Bay, there are no significant sources of untreated (i.e., septic tank) or treated wastewater discharges to surface waters in the Pajaro River watershed. The five primary wastewater treatment facilities in the Pajaro River watershed are summarized below. None discharge directly to surface waters, and the proposed TMDL Project Report concludes that permitted wastewater treatment facilities are not a source of fecal coliform water quality impairment of the Pajaro River.

The bacteria source identification studies completed by the Central Coast Water Board indicate that the human fecal coliform concentrations are very low in the Pajaro River watershed. Almost all of the measured fecal coliforms in the watershed are generated by birds or animals. Epidemiological data shows that bacterial indicator concentrations do not correlate with human health risks in the absence of significant amounts of human fecal coliforms. The proposed TMDL exclusively utilizes an inappropriate fecal coliform concentration measure that does not reasonably correlate with the protection of recreational beneficial uses.

Response to Comment 16

Staff acknowledges that human waste or inadequacies at waste water treatment plants have been implicated in the overwhelming majority of almost all documented large-scale waterborne pathogen outbreaks. Staff also finds that the potential exists for contamination of water with pathogens from agricultural and rangeland sources.

Please also see Response to Comments 14 and 11 pertaining to this issue.

The commenter also refers to ribotyping microbial source tracking analyses conducted for other TMDL watershed projects in the Central Coast. The commenter cites the

percent contribution from individual host species reported in isolates, evidently concluding that the lab analyses translate or extrapolate to specific, quantitative host-specific source load proportions. Dr. Stefan Wuertz, UC Davis, Scientific Peer Reviewer for this TMDL, has cautioned Water Board staff regarding uncertainty associated with assigning host-specific load based on ribotyping data for fecal sources (*Scientific Peer Review of TMDLs for Pathogens in the San Lorenzo River Watershed, Soquel Lagoon Watershed, and Aptos Creek Watershed*, dated Oct. 1, 2007). Dr. Wuertz stated that "ribotyping is not a quantitative method."

Further, Dr. Wuertz informed Water Board staff that assigning proportional loads or per cent contributions from individual host species based on the isolates is problematic. Professor Wuertz stated, "A certain number of isolates per water sample are analyzed and it is unknown whether the same numerical distribution of microbial host species would be obtained if 10 or 100 times as many isolates from the same water sample had been analyzed." Even if an optimal number of isolates were analyzed Dr. Wuertz points out, "it is not known if these strains all have the same decay function/environmental persistence." Based on our scientific peer reviewer's comments, Water Board staff are using the ribotyping data mostly for qualitative identification of wildlife, livestock, pets, and human as sources of pollution. In the Pajaro River Watershed TMDL project report, staff considered ribotyping results as one line of evidence and as an "estimate" of possible sources and possible relative source contributions. Dr. Wuertz has concurred with staff that ribotyping data for fecal coliform source identification are used mostly to make *qualitative* assessments of host-species sources. In short, based on the technical guidance staff has received, it is not appropriate to assign quantitative source loads for specific host-species in the ribotyping data cited.

Staff acknowledges that the contribution of human fecal material waste is likely to be negligible in many rural and agricultural parts of the Pajaro River Watershed. <u>Furthermore, the Water Board is required to establish load allocations for all sources of fecal coliform that are contributing to exceedences of water quality objectives, human or otherwise.</u> Staff recognize that human waste has been demonstrated to be a higher risk to health, and this is reflected in setting the load allocations. As reflected in the proposed Basin Plan Amendment, load allocations to discharges of human waste is set at zero, load allocations for other sources is set at the water quality objective identified in the Basin Plan. Water Board Staff or the Water Board will only establish and enforce requirements to meet load allocations to discharges of human waste in locations of the Pajaro River Watershed where sources of human waste are present (e.g., in municipal areas with community collection and treatment systems) and for owners and operators of facilities that are or may be discharging human waste.

Comment 17 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

Insufficient consideration of existing background fecal coliform concentrations….the proposed TMDL must accurately describe the natural, baseline occurrence of fecal

coliforms in the Pajaro River watershed and explain how the proposed regulation can be achieved if background and naturally-occurring conditions would result in exceedances irrespective of fecal coliform concentrations in regulated discharges.

The Project Report focuses on data derived from Waddell Creek, a stream located in Big Basin State Park in the Santa Cruz Mountains. The Project Report suggests that since the Waddell Creek data generally exhibited fecal coliform concentrations from background sources that were below the proposed water quality objective, natural background conditions in the Pajaro River watershed must also be below the proposed objective. Based on this assumption, the Project Report concludes that the proposed TMDL water quality objective can be achieved by controlling fecal coliforms in regulated discharges.

This analysis fails to conform with Water Code requirements for several reasons, including the following:

(a) Average annual rainfall in Big Basin State Park is approximately 48 inches per year, significantly higher than in the Pajaro River watershed. Average annual rainfall is approximately 13 inches per year in Hollister, for example, and 21 inches per year in Gilroy, communities that are located in the Pajaro River watershed. Data from Waddell Creek is not indicative of background conditions in the Pajaro River watershed because the more significant rainfall affecting Waddell Creek substantially dilutes the concentration of fecal coliforms in the creek's stormwater compared with flows in the Pajaro River watershed.

(b) The analysis does not consider the Central Coast Water Board's studies of the Watsonville Slough (Central Coast Water Board, 2005) and Soquel Creek (Central Coast Water Board, 2007) which indicate that naturally occurring fecal coliforms attributed to birds and animals are sufficient to generate exceedances of the proposed fecal coliform TMDL water quality objective.

(c) The analysis is not consistent with several recent studies that have shown that naturally occurring background fecal coliform levels frequently exceed the proposed TMDL water quality objective in surface water. A study of the Ballona Creek watershed in Los Angeles County, for example, found that fecal indicator bacteria concentrations were as high at the head of the watershed where no human, anthropogenic contributions occurred as at the creek's downstream discharge point after traversing through a heavily urbanized area. Based on this result, the study observed that almost all flows in the watershed, including areas not subject to significant human influence, would require secondary treatment. Median E. coli and Enterococcus concentrations in wet weather flows from natural, non-anthropogenic catchments have also been shown to exceed water quality objectives. These studies indicate that the Waddell Creek data is not representative of background fecal coliform and other bacterial conditions in the Pajaro River watershed.

(d) The analysis does not consider studies demonstrating that water body sediments sustain and breed fecal coliforms that contribute to chronic water quality objective exceedances. Fecal coliforms have been shown to reproduce and compete in warm soils, to be normal members of a microbial community, and to have survival rates lower than certain waterborne pathogens. Sediments can function as reservoirs for E. coli and Enterococcus and can facilitate bacteria growth after discharge in the water column. E. coli concentrations in bottom sediments have been observed at levels 760 times greater than in overlying waters and can be re-suspended after rainstorm events.

The proposed TMDL has not properly considered the existing environmental conditions within the Pajaro River watershed. As a result, the TMDL can not reasonably ascertain whether it is possible to achieve the water quality objective given naturally occurring fecal coliform levels and sources in the watershed.

Response to Comment 17

Please refer to Response to Comment 1. Staff has amended the project report to provide a more robust analysis of baseline environmental conditions, and an assessment of the potential relative contribution of indicator bacteria from natural sources. Please see Appendix A, Attachment 4 of the Project Report.

Staff acknowledges that Waddell Creek and Scott's Creek are climatologically significantly different that watersheds in the Pajaro project area. Staff has amended the Project Report with information from a more climatologically appropriate undeveloped reference stream (Arroyo Seco River, Salinas Valley) as well as the aforementioned technical analysis of baseline conditions and source load analysis in the Project Report

Staff acknowledges that scope and impact of the re-growth of indicator bacteria is an uncertainty. Staff has amended the Project Report to identify fecal coliform deposited in sediments as a distinct natural source. The Scientific Peer Reviewer for this TMDL, Dr. Stefan Wuertz, stated that the potential for re-growth of microbial organisms in the watershed is largely unknown. <u>This uncertainty, however, does not preclude developing implementation plans to address loads from controllable sources.</u> If re-growth and resuspension of microbial indicators is in fact contributing to significant bacteria loading or water quality exceedences, this does not exclude the requirement to implement actions to mitigate the contribution of loads from controllable sources. Further, the proposed Basin Plan Amendment contains adaptive elements, that would in the future, be considered if responsible parties and Water Board Staff demonstrate that reducing loading from controllable sources cannot achieve water quality objectives either due to water quality impairment caused by natural background loading, or due to re-growth and resuspension of microbial indicators. Please refer to Response to Comment 1 for further information pertaining to this issue.

With respect to the comments on Ballona Creek, staff contacted Los Angeles Regional Water Quality Control Board (LARWQCB, Region 4) staff for information pertaining to the Ballona Creek Bacteria TMDL. Region 4 staff reported that in the Ballona Creek Bacteria TMDL they did not make a definitive assertion that water quality impairments in tributary headwaters were caused by natural background conditions (Ginachi Amah, LARWQCB, per. comm.). Region 4 staff reported that the Ballona Creek TMDL contained an adaptive implementation measure that made an allowance for Responsible Parties to submit a "Natural Sources Exclusion Study" during the implementation phase as a demonstration that natural background were causing impairment of the waterbody. However, this did not preclude or exclude Responsible Parties from implementing actions to address existing controllable anthropogenic sources loading to the waterbodies. The proposed Basin Plan Amendment for the Pajaro River Watershed contains similar adaptive allowances during the implementation phase. Please refer to Response to Comment 6.

Comment 18 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

Unsupported exclusion of agriculture from fecal coliform load allocations….The Project Report asserts that irrigated agricultural operations are not a source of fecal coliforms that may contribute to exceedances of the water quality objective. As a result, the Project Report assumes that regional farmers and growers will not be required to meet the fecal coliform discharge requirement. The conclusion that agriculture is not a significant source of fecal coliforms, however, is not supported with sufficient evidence, and it is possible that farmers and growers in the Pajaro River watershed will be required to meet the TMDL discharge requirement in the future. The costs and operational constraints potentially associated with TMDL compliance, such as the detention and treatment of potential farmland stormwater to remove fecal coliforms, could severely impact regional agriculture….The Project Report conclusions are also contradicted by studies indicating that irrigated agricultural operations can mobilize animal, bird or fertilizer-related fecal coliforms during irrigation, soil management and other activities. The extension of the proposed TMDL to agricultural operations could substantially and adversely affect organic and other high-value crop activities in the region without generating significant public health or other water quality benefits.

Response to Comment 18

Please refer to Response to Comment 8 pertaining to source analysis of irrigated cropland.

The proposed Basin Plan amendment does not mandate or require the treatment and detention of runoff from farmland. Please also refer to Response to Comment 2 and Response to Comment 9.

Additionally, staff acknowledges that fecal material from natural wildlife sources is deposited on cropland, and potentially mobilized. Natural background has been

identified as a source and assigned a load allocation in the proposed Basin Plan Amendment. Staff has neither identified, nor been provided, with any credible evidence that stormwater or tailwater runoff from cropland is a controllable source causing significant loading of indicator bacteria to impaired waterbodies in the watershed. It is widely accepted that the major risk of controllable pathogen loading from croplands is associated with application of raw or untreated manure, or the improper storage of manure. Staff has concluded that application of raw or untreated manure to croplands in the Pajaro Watershed project area appears to be negligible. Further, information from the U.S. Environmental Protection Agency indicates that fecal coliform concentration ranges in runoff from cropland is between one to two orders of magnitude less than the fecal coliform concentrations in runoff from grazed pasture or urban runoff (USEPA, Protocol for Developing Pathogen TMDLs, 2001).

Comment 19 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

Insufficient consideration of costs and other potential economic impacts. …

The Project Report estimates the costs associated with the proposed TMDL by calculating the average annual household expenses reported for recently-approved federal Clean Water Act (CWA) Phase II Stormwater Management Plans (SWMPs) in the Central Coast region. The reported annual SWMP costs ranged from $21 in Seaside to $130 in the City of Monterey, and the average cost per household was calculated at $77. To estimate the expenses associated with the proposed TMDL, the average household cost was increased by 2 to 15 percent to reflect additional expenses reported in Marin County for a pathogen reduction program. This methodology fails to comply with applicable Water Code requirements for several reasons:

The only factor used to estimate the proposed TMDL compliance costs is a "2 to 15 percent" increase in SWMP program expenses that was reportedly experienced in Marin County. This factor was derived from a "personal communication" with sources in Marin County and relates to a pathogen program comprised of "signage, education, and pet waste reduction measures." In contrast, the pathogen-specific recommendations in the proposed TMDL include a significantly greater range of measures, including pet waste and dumpster leachate management, control of bird, rodent, and other wildlife waste, control of pathogen loading from private laterals, public education, and development and implementation of low-impact development principles. There is no evidence that the anecdotal "2 to 15 percent" SWMP program increase reportedly experienced in Marin County is reasonably representative of the potential costs associated with the more extensive measures included in the proposed TMDL.

Staff Response to Comment 19

In this action, the Central Coast Water Board is not adopting a new water quality objective, but rather is implementing an existing objective, and is therefore not required to consider the factors in Water Code section 13241. In City of Arcadia v. State Water

Resources Control Board, 135 Cal.App.4th 1392, the court declined to rule on whether the Water Board was required to consider the factors in section 13241 because it determined that the Los Angeles Water Board in that case had adequately considered economics in adopting the TMDL. See page 1415. Further the court said that the Water Board need not consider every conceivable compliance method. See page 1418. In this matter, the Central Coast Water Board has considered economics and other factors consistent with section 13241. Although not required, it did in fact consider the factors. In particular, the Water Board evaluated the costs of a range of methods to comply with the TMDL. See Environmental Checklist at . http://www.waterboards.ca.gov/centralcoast/board_info/agendas/2009/2009_agendas.shtml It evaluated the environmental characteristics of the watershed, identified the beneficial uses of water, evaluated the conditions that could be achieved with compliance with the TMDL, and economics.

The comment refers, in part, to the range and scope of management measures identified in the Project Report. Please note, the Water Board cannot mandate or designate the specific types of on-site actions necessary to reduce indicator bacteria loading, or to meet allocations by the various responsible parties. Specific actions or management measure that are described or identified in the project report can only be suggestions or examples of actions that are known to be effective. The measures staff tabulated in the project report are examples or suggestions of potential management measures. Staff acknowledges the best people in a position to identify, propose, and implement cost-effective measure and measures that are effective at meeting load allocations, and attaining water quality goals, are City and County staff with knowledge of local conditions. The 2% to 15% program cost increase for stormwater budgets was provided to the San Francisco Bay Regional Board staff by the Director of the Marin County Stormwater Program. Staff does not agree that the cited numbers provided in the Project Report are unsupportable or unreasonable.

Comment 20, San Benito Cattlemen's Association; Comment 19 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

All water quality objectives adopted by the Water Board, including TMDLs and Basin Plan objectives, must comply with the requirements of Water Code Sections 13000 and 13241.

Section 13241 provides that:

> Each regional board shall establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance; however, it is recognized that it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses. Factors to be considered by a regional board in establishing water quality objectives shall include, but not necessarily be limited to, all of the following:

(a) Past, present, and probable future beneficial uses of water.
(b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.
(c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.
(d) Economic considerations.
(e) The need for developing housing within the region.
(f) The need to develop and use recycled water.

Response to Comment No. 20

In this action, the Central Coast Water Board is not adopting a new water quality objective, but rather is implementing an existing objective, and is therefore not required to consider the factors in Water Code section 13241. In *City of Arcadia v. State Water Resources Control Board*, 135 Cal.App.4th 1392, the court declined to rule on whether the Water Board was required to consider the factors in section 13241 because it determined that the Los Angeles Water Board in that case had adequately considered economics in adopting the TMDL. See page 1415. Further the court said that the Water Board need not consider every conceivable compliance method. See page 1418. In this matter, the Central Coast Water Board has considered economics and other factors consistent with section 13241. Although not required, it did in fact consider the factors. In particular, the Water Board evaluated the costs of a range of methods to comply with the TMDL. See Environmental Checklist at **http://www.waterboards.ca.gov/centralcoast/board_info/agendas/2009/2009_agendas.shtml** It evaluated the environmental characteristics of the watershed, identified the beneficial uses of water, evaluated the conditions that could be achieved with compliance with the TMDL, and economics.

Comment 21 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

The assessment appears to ignore significantly higher SWMP compliance costs that have been reported in the Central Coast region. A recent Central Coast Water Board staff report stated that "the annual cost per house [to implement the SWMP] for the Monterey Regional Group ranged from $20 to $655 (Seaside $20, Monterey County $119, City of Monterey $130, Sand City $650)."[1] These values would increase the baseline costs used to analyze proposed TMDL household expenses by approximately 300% to 400%.

Response to Comment 21

Staff acknowledges the uncertainty of estimating costs for developing a pathogen control plan as part of an NPDES program. Staff kept the Project Report text as it is. Staff does not agree that the cost estimates are unsupportable. The range of costs

cited from the September 7-8 Staff Report, Item 13 come from an informal survey conducted by staff. The range obtained by staff – (Seaside $20, Monterey County $119, City of Monterey $130, Sand City $650) – were not based on standardized costs, and are not strictly comparable to each other. Reporting and cost tabulation standards reportedly varied widely; some entities included costs (e.g., street sweeping, garbage collection, other city functions) that would take place with or without a pathogen control TMDL implementation program and are accounted for in other city program budgets. Other entities did not include these costs. Costs incurred for stormwater management are pursuant to the Phase II NPDES regulations, which pertain regardless of TMDL adoption. The TMDL implementation and indicator bacteria monitoring plan would impose an incremental increase over these other program costs. Staff has endeavored to limit requirements to the minimum necessary to achieve water quality results.

Staff does not agree that an estimated mean annual cost of $77 dollars per household is inappropriate. The 2005 NPDES Phase I Stormwater Costs study referenced in the project report was a peer reviewed robust technical study by California State University, Sacramento (CSUS) researchers. The study looked at standardized and normalized costs associated with NPDES programs across the State. The estimates they derived ranged from $18 to $46 dollars per household (although these did not include start-up costs which could increase the total cost per household). Regional Board stormwater staff report that the city of Encinatas, a small coastal town in southern California, has a robust and well functioning NPDES program, which the aforementioned CSUS researchers documented costs $46 per household. The commenter suggested that NPDES program costs associated with a pathogen control program could be 300% to 400% higher than staff's estimate, placing the cost per house in the $200 to >$300/house range. Based on the discussion above, staff does not agree that this estimated range of cost is reasonably plausible. Staff concludes the estimate of $77 dollars per household is reasonable and supportable.

Comment 22 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

There is no evidence that the measures reportedly implemented in Marin County or the more extensive measures identified in the proposed TMDL will achieve the fecal coliform water quality objective. In other jurisdictions, pathogen control objectives have been found to require or to potentially involve the design, construction and long-term operation and management (O&M) of stormwater diversion, storage, and secondary treatment facilities. An economic analysis prepared for the Santa Ana River watershed, for example, showed that stormwater detention and disinfection capital costs (i.e., excluding long-term O&M expenses) could range from $131 to $3,993 per household. To comply with the Water Code, the proposed TMDL analysis must provide evidence that the proposed control measures will achieve the water quality objective. If such evidence cannot be reasonably provided, then the analysis must identify capital and O&M costs that could be associated with additional measures, such as stormwater capture, treatment, and disinfection or other fecal coliform reduction technologies.

Response to Comment 22

To date, there are no TMDLs and corresponding implementation plans in the state that have progressed through their entire implementation period. Therefore, staff has not observed the affects of any other implementation plans on water quality, and staff cannot predict or assert that the TMDLs and allocations cannot be achieved. Also, because this is a 303(d) listed waterbody, the Water Board is mandated to develop TMDLs and allocations.

The Scientific Peer Reviewer for this TMDL, Dr. Stephan Wuertz, concurred with staff that the proposed allocations for controllable sources of indicator bacteria origin is feasible, supported by monitoring data and source identification, and may be adequate to achieve necessary load reductions. Staff has endeavored to build flexibility into the proposed Basin Plan Amendment for adapting the numeric water quality targets and allocations as necessary and supportable. Reporting and monitoring requirements recognize that City staff, land owners, and other responsible parties are in the best position to evaluate on-site local conditions, and to propose and implement cost-effective actions to achieve water quality goals and achieve allocations.

Comment 23 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

The analysis does not sufficiently consider other factors identified in Section 13241, such as "developing housing within the region" and the need to "develop and use recycled water." Housing can result in the more efficient transmission of animal or bird fecal matter from roads, roofs or other constructed surfaces to receiving waters. Increased recycled water use could mobilize animal or bird wastes that might contribute to water quality objective exceedances. To comply with the Water Code, the proposed TMDL must consider how regional housing and recycled water programs could be affected if additional controls, including runoff detention and treatment facilities, are required to achieve the proposed TMDL's objective.

Response to Comment 23

Please refer to the California Environmental Quality Act Substitute Document Report, Attachment 3 of the proposed Basin Plan Amendment. Attachment Three was posted online for public review and comment, and contained the environmental analysis for a reasonable range of environmental, economic, and population, housing, and technical factors associated with the proposed Basin Plan Amendment as required by CEQA for certified regulatory programs.

Comment 24 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

Incorporate natural, reference watershed information in the water quality objective. Due to the technical concerns described in this comment letter, other jurisdictions, including

the Los Angeles Water Board, Ventura County and San Diego County, have developed pathogen water quality objectives that incorporate an allowable number of exceedances based on an appropriate, natural reference watershed rather than a single maximum concentration. This approach more defensibly and reasonably accounts for natural conditions and more effectively focuses regulatory attention on controllable anthropogenic sources…. Analyze potential seasonal variations affecting the water quality objective. Pajaro River water quality data should be further analyzed to determine whether seasonal water quality objectives are more appropriate than a single criterion that applies in all conditions. Pathogen TMDLs developed in the Los Angeles and San Diego regions, for example, incorporate measures for wet and dry weather conditions. This approach can provide a more defensible and reasonable method for protecting recreational beneficial uses.

Response to Comment 24

The reference system approach was developed by the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board), and was developed as an implementation policy for single sample bacteria water quality objective in the context of a TMDL. This approach identified a certain number of allowable exceedances of the single sample water quality objective for bacteria. A single sample water quality objective is essentially a "do not exceed" objective. Please note, the Central Coast Region Basin Plan Water Quality Objective for fecal coliform (i.e., the proposed numeric target in this TMDL) is not a "never exceed" water quality criteria. The water quality objective of 200 MPN/100 mL is applied as a geometric mean of five samples collected in a 30-day period. This is intended to account for fluxes from storm events or periodic stagnant conditions. It is important to note that, unlike the arithmetic mean, the geometric mean is a statistical function that is less affected by extreme or anomalous values and is useful for evaluating skewed data sets. In short, the TMDL for the Pajaro project area allows exceedances of the water quality criteria to occur, and in this respect is effectively the same approach as the reference watershed approach the commenter refers to.

Comment 25 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

Comprehensively consider potential costs and economic impacts. As discussed above, the proposed TMDL cannot comply with Water Code requirements until potential compliance costs and economic impacts are properly characterized and the reasonableness of these expenses is explicitly considered. The analysis should obtain studies and information from other jurisdictions, such as Los Angeles City or Encinitas that have comprehensively analyzed the potential costs associated with pathogen TMDL compliance.

Response to Comment 25

Please see Response to Comment 20. Also, staff understands that the City of Encinitas independently and proactively built their low flow diversion system to address bacterial runoff to beaches (per. comm.. Phil Hammer)), because of economic and health consequences of beach closures. The City obtained funding through the Clean Beaches initiative grant program to build an ultra-violet treatment process. As such, staff does not consider this to be a good analogy for potential TMDL development actions to address bacterial loading to streams in the Pajaro Watershed project area.

Comment 26 - San Benito Cattlemen's Association (Joe Morris, President); Darlene Dinn; San Benito County Farm Bureau; The Ranch Company (John Eade)

Revise the Basin Plan and reconsider TMDL development. The information developed in the preceding sections should be utilized to revise the Basin Plan and applicable TMDLs as required to address recreational beneficial uses in the Pajaro River and other regulated watersheds. This process can be conducted in conjunction with the regular triennial review of the Basin Plan and would be consistent with court mandates in other jurisdictions regarding regulations that do not comply with applicable Water Code requirements.

Response to Comment 26

Please refer to Response to Comment 20. Also, with regard to addressing beneficial uses, Staff, other Regional Boards and the State Board have been evaluating establishment of a limited REC1 water quality objective that allows higher levels of bacteria. Staff determined that the need to adopt a TMDL based on current water quality standards in order to initiate control of controllable sources outweighed the benefit of taking more time to develop the data and information to support a new beneficial use category, designation and water quality objective. However, that possibility remains on the table for future consideration

Comment 27 – S/K Cattle Company

….we feel that the TMDL regulations outlined in the Basin Plan are illegal under California Water Code because the Central Coast Regional Water Quality Control Board has not researched or considered all factors before implementation, including the astronomical fiscal impacts on agriculture and land owners. Further more the Basin Plan is based on outdated reports that have little scientific merit.

Specifically the proposed TMDL regulations are based on fecal coliform levels rather than E. Coli and Enterococci bacteria levels which are recognized by the Environmental Protection Agency to be more accurate indicators of human health risks.

Response to Comment 27

Please refer to Response to Comment 14 and 4. With regard to the comments pertaining to the Water Code, please refer to Response to Comment 20.

Comment 28 – S/K Cattle Company

Currently the natural levels of fecal coliform from wildlife (birds, wild pigs and deer, etc.), that occur in the Pajaro River and subsidiary creeks are higher then the proposed baseline TMDL requirements. This translates into immediate and substantial costs for landowners as soon as the regulations take effect.

Response to Comment 28

Staff does not agree that there is definitive or empirical evidence of sustained and widespread impairment of streams in the watershed attributable simply to the fractional load from natural, non-controllable natural or wildlife sources. If continued monitoring and research reveals that the fractional load from noncontrolloable background sources are causing sustained water quality exceedences, this does not preclude reducing the existing bacteria load from controllable sources. In short, controllable sources may not intensify or worsen the magnitude of a water quality impairment. Please also refer to Response to Comment 1 for further information pertaining to this issue.

Comment 29 - Grower-Shipper Association of Central California

I wish to express to the Board that I agree with all the statements made by Ms. Din in her letter of January 20. For formal comment purposes, we incorporate all of Ms. Din's remarks into this letter by reference herein. Specifically, we request that the Central Coast Water Board decline to adopt the proposed TMDL and implement alternative actions to properly identify and regulate pathogens that could impact recreational benefit uses. GSA is a strong supporter and proponent of the California Leafy Greens Marketing Agreement (LGMA). The LGMA, as well as the Ag Waiver program, include farm plans, rangeland management plans, and other management practices designed to address the very things this proposed amendment does.

Response to Comment 29

See responses to comments 14 through 26 which are the comments submitted by Ms. Din. With regard to your reference to rangeland management practices and farm plans please refer to Response to Comment 9.

Comment 30 – Santa Clara County

Based upon the documents posted on the state web site for this upcoming item, the document shown in attachment 5 appears to refer to Aptos Creek, Valencia Creek, and

Trout Gulch, not the Pajaro River Watershed. It appears that the comments provided are for a different watershed than the comments provided in Dr. Wuertz's analysis dated July 30, 2008. So that Board Staff can provide the appropriate response to Dr. Wuertz's report for review by the general public, it would seem additional review cycle would be in order.

Response to Comment 30

Staff acknowledges a formatting error that transposed a Subtitle heading and several sentences in the source analysis section peer review from the Aptos Creek Pathogens TMDL that the Scientific Peer Reviewer, Dr. Wuertz, also provided comments for. The commenter was sent the original copy of the Pajaro River Watershed TMDL peer review comments by Dr. Wuertz in an email dated December 24, 2008.

The two formatting errors that staff has been able to identify is an incorrect subtitle on Section 1 of Attachment 5, which identifies Aptos Creek, rather than the Pajaro River watershed as the subject of the document. Further, the document incorrectly incorporates Dr. Weurtz's references and comments pertaining to Santa Cruz County's ribotyping study used for the Aptos pathogen TMDL source analysis, rather than the Morro Bay estuary ribotyping study that the was cited in the Pajaro pathogen TMDL source analysis. However, the substance of Dr. Wuertz's comments were very similar for both ribotyping studies. Namely, that staff's use of the ribotyping data for fecal coliform was appropriate in the source analyses for both projects. One oversight by staff, is that in the original Pajaro Watershed peer review Dr. Wuertz provided , he made reference to the potential regrowth and resuspension of bacteria in sediment in Morro Bay. Dr. Wuertz recommended that since staff referenced the Morro Bay ribotyping study in the Pajaro source analysis, staff should include bacteria deposited in sediments as a discrete natural source. Staff has amended the project report to reflect that bacterial sinks in sediment, and bacteria regrowth and resuspension is a potential contributor to natural background loads in the Pajaro River Watershed. This amendment to the project report does not carry any regulatory consequences, since allocations to uncontrollable natural background sources are not subject to regulation.

Staff finds that the remainder of Attachment 5, Staff response to Peer Review, is an accurate accounting and response to the peer review of the TMDLs for the Pajaro River Watershed waters. The commenter was provided the original peer review for the Pajaro River TMDL. Since errors identified in the web posted document have no regulatory consequences staff does not agree that another review cycle is merited.

Comment 31 – Santa Clara County

In previous reports prepared by Regional Board Staff, this TMDL was considered low priority with an estimated time of approval in 2019. What has changed to push the approval of this TMDL up ten years?

Response to Comment 31

Staff considered this TMDL low priority with an estimated time of approval in 2019 during development of the 2002 303(d) List and the State Water Resources Control Board and USEPA approved that date. When the 303(d) List was updated in 2006, the Water Board, State Water Resources Control Board and USEPA approved a revised TMDL completion date for the project, 2011. Staff anticipates USEPA approval of this project in 2011, assuming timely approval by the Regional and State Water Boards.

Comment 32 – Santa Clara County

It appears from the discussion in the report, that the area to be covered by this TMDL is the entire Pajaro River watershed. From recent discussions with the Board Staff, the limits of the proposed for the upcoming National Pollutant Discharge Elimination System (NPDES) Phase II permit for Southern Santa Clara County discussed in the report will only be the limits of rural "San Martin". As the TMDL appears to require the limits of the NPDES Phase II Permit to incorporate all of the grazing lands in Southern Santa Clara County be incorporated in the NPDES Phase II Permit, how does this apparent inconsistency in effected areas of the TMDL and NPDES Phase II Permit get resolved?

Response to Comment 32

The TMDL applies to Pajaro River Watershed. Responsible parties within the boundaries of a Municipal Stormwater Permit must comply with the requirements of the permit. Owners and operators of lands containing domestic animals (such as rangeland, farm animal operations, and hobby ranches) that do not drain to MS4s are regulated under a separate regulatory mechanism, namely the proposed Domestic Animal Waste Discharge Prohibition, and are not required to comply with requirements of the Municipal Stormwater Permit.

Comment 33 – Santa Clara County

Figure 2-1 should be broken into two exhibits clearly indicating all-pertinent geographical locations noted in the report. Tesquisquita Slough and San Felipe Lake should be located.

Please refer to or provide a copy of Figure 2-2 in Section 4 – Data Analysis

Response to Comment 33
Unfortunately, time and resource constraints prevent staff from drafting and incorporating new figures. The geographic areas of the project are described in the implementation section of the report. Please see areas subject to the TMDL allocations in Table 9-1.

Comment 34 – Santa Clara County

Please provide a reference to the Basin Plan that states the entire reach of the Pajaro River and its tributaries have been classified as "Water Contact Recreation (REC-1)". From review of Table 2-2 of the September 8, 1994 Basin Plan, it appears that the use category for the Pajaro River has not been established.

Response to Comment 34

The commenter refers to Table 2-2. Table 2-2 pertains to Beneficial Uses of Coastal Waters. Please refer to Table 2-1 for Beneficial Uses of Inland Surface Waters. Surface water bodies within the Region that do not have beneficial uses designated for them in Table 2-1 are assigned the following designations: Municipal and Domestic Water Supply; Protection of both Recreation and Aquatic Life (Basin Plan, Chapter 2, page II-1).

Comment 35 – Santa Clara County

For many reaches of the Pajaro in Santa Clara County, the river is inaccessible either by overgrowth of the adjacent trees and/or no legal rights-of-way exist to access the river. As such, swimming is not a common use. These issues make human contact nearly impossible in many locations

Response to Comment 35

Staff concurs that swimming and access in certain reaches of the Pajaro River is probably not very common. However, streams and waterbodies are not closed systems. Impaired water quality in a reach of a stream that is inaccessible, flows into reaches of the waterbody for which beneficial uses are either currently being exploited, or have the potential to be exploited. The REC-1 beneficial use is broadly defined as any activity that involves contact with the water, and the reasonably possible ingestion of water.

Comment 36 – Santa Clara County

Please define CCAMP. Who are they? What is their function? How does CCAMP have the expertise to provide sampling data?

Response to Comment 36

The Central Coast Ambient Monitoring Program (CCAMP) is the Central Coast Regional Water Quality Control Board's regionally scaled water quality monitoring and assessment program. The purpose of the program is to provide scientific information to Regional Board staff and the public. For further information, please refer to the website (www.ccamp.org).

Comment 37 – Santa Clara County

Please break Figures 4-1, 4-2, and 4-4 into multiple figures to more accurately identify the elements shown. The scale is so small that the detailed locations of the information depicted is lost.

Response to Comment 37

Unfortunately, time and resource constraints prevent staff from drafting and incorporating new figures. The commenter is referring to two maps showing locations of monitoring sites, and a map depicting land uses. With respect to the two figures depicting monitoring sites, the site locations are described in the tables accompanying the maps. A map with higher resolution would still require monitoring site descriptions. With respect to the map depicting land uses, the land use delineations are estimates and were not used to calculate allocations.

Comment 38 – Santa Clara County

Does the CCAMP data speak to when the data was collected with respect to the general hydrologic cycle of the basin. Both periods noted were relatively wet years with individual storms exceeding the 25-year return period. It would seem prudent to have more data addressing dryer and wetter rainfall years.

Response to Comment 38

As summarized in the project report, Water Board staff collected indicator bacteria data from 2006-07 to supplement the previous CCAMP data. Staff concurs that more data is always preferable to less data. CCAMP monitors on a cyclical basis, and monitoring requirements are proposed in the Basin Plan Amendment. The lack of more quantities of data at this point, does not preclude implementing TMDLs for impaired water bodies as required by federal law. The proposed Basin Plan Amendment has adaptive and flexible provisions to address the results of future monitoring results and implementation activities.

Comment 39 – Santa Clara County

More data than the two full seasons and partial season provided is required to make any conclusions. A continuation of the sampling plan should be addressed in the SWMP prior to additional requirements for water quality.

Response to Comment 39

Staff does not concur. There is no requirement under the Clean Water Act to acquire monitoring data over several seasons or years to initiate implementation actions for known or suspected controllable source loads to impaired water bodies. The Scientific Peer Reviewer and the USEPA reviewer have concurred that our identification of controllable sources in the watershed is fully justified by the available data. However,

the proposed Basin Plan Amendment has adaptive and flexible provisions to address the results of future monitoring results and implementation activities.

Comment 40 – Santa Clara County

As this drainage basin is characterized by generally cool, rainy winters and warm, dry summers, it appears that two standards, one for wet season and one for dry season, may be in order. As was noted in the report, the accumulation from the months of zero runoff creates highly polluted waters during the rainy season. Swimming would likely occur during the summer. Some recognition of the climatological factors that affect the flows in the waterways needs to be addressed.

Response to Comment 40

Staff does not concur that two numerical seasonal targets need to be established at this time. The proposed Basin Plan Amendment has adaptive measures and flexibility to revisit numeric targets and allocations if monitoring data resolves some of the uncertainties about natural background conditions and seasonality.

The available data suggest that controllable loads are currently causing, or contributing, to loads that are exceeding water quality objectives and impairing water bodies. The data shows the impairments are in both wet weather and dry weather. In addition, staff amended the project report to include a load duration analysis (See Project Report, Appendix A, Attachment 4) showing that bacteria loads are exceeding the assimilative capacity in the San Benito River and Pajaro River at both low flows and high flows. Also, please refer to Response to Comments 14 and 6 for further information of adaptive implementation and revisiting numeric targets in the future.

Comment 41 – Santa Clara County

Please provide a figure that clearly delineates the Impaired Reaches shown in Table 4-7.

Response to Comment 41
Unfortunately, time and resource constraints prevent staff from drafting and incorporating new figures. The locations of the impaired reaches are best described verbally, which is provided below Table 9-1 of the TMDL Project Report (Att-2 to the Staff Report).

Comment 42 – Santa Clara County

In the Land Use Data Section, it appears that a study of local General Plans and Zoning Ordinances is not used as part of this study. The information provided on Figure 4-4 and Table 4-8 can be adjusted to better fit the actual allowed uses in the watershed. This is important as most non-commercial rural uses in Santa Clara County allow agriculture as a matter of right, and is thereby non-regulated.

Response to Comment 42

Staff used land use data from the Farmland Mapping and Monitoring Program (FMMP), California Department of Conservation, Division of Land Protection to classify land use in the figure cited. This data is sufficient for the purposes of source assessment and TMDL development; this data is not used to determine individual responsible parties, i.e., those who will be regulated.

Staff acknowledges that there is a great deal of local information, including the General Plans and Zoning Ordinances which the commenter refers to. We acknowledge the intimate knowledge City staff, County staff, and landowners have about local conditions and land management practices. The proposed Basin Plan Amendment is intended to provide flexibility and adaptability in the monitoring and reporting requirements to take advantage of the intimate local knowledge landowners and public entities have about onsite practices and status of local lands. The reporting requirements allow local responsible parties, or their voluntary representatives to demonstrate local conditions and propose alternatives, and implementation actions that best reflect onsite conditions and cost efficient ways of achieving water quality goals.

Comment 43 – Santa Clara County

In Section 4.7, a causal link between the use of studies of estuary water bodies and watershed headwaters needs to be provided. It is unclear from the report how the two are related. As estuary waters generally flow very slowly and only release to the oceans during rainy times with high flows from the headwaters, the link to upstream, partially arid, lands is not clear. It seems inappropriate to make recommendations for the upstream area based upon findings in the estuary portion of different watersheds and further study of this particular watershed is warranted.

Response to Comment 43

The comment refers to the Morro Bay and Watsonville ribotyping studies, which pertained to qualitative source analysis only, and were used as one line of evidence among other lines of evidence for the Pajaro River TMDL project. Also, please refer to Response to Comment 16.

Comment 44 – Santa Clara County

The following statement in Section 5.1.1.1 appears to be a groundless for the entire watershed, as no supporting data or research has been presented in the report other than the one sample from the storm drain at Main Street:

"Staff concludes that the sources in the following subsections were likely in storm drain discharges (to municipally owned and operated storm sewer systems) to surface water bodies in the Pajaro River watershed."

Further investigation is required to determine if other communities encounter concentrations exceeding legal limits in their storm drainage. This element should be

incorporated in the initial monitoring/scoping plan in the SWMP to determine the conclusions are valid in other communities.

Response to Comment 44

Staff does not agree that further investigation is needed to determine if urban stormwater discharge is a controllable source of bacteria loading to streams within the watershed. However, staff amended the project report with some clarifying language and narrative supporting the source identification of urban runoff.

Staff acknowledges the storm drain water quality data collected in the Pajaro Watershed is extremely limited. It is not necessary to conduct comprehensive stormdrain monitoring from a range of communities in a watershed to call out urban stormwater as a source in TMDL development. It is universally acknowledged that urban stormwater is a ubiquitous source of bacteria loading to adjacent waterbodies. It is widely acknowledged, and recognized by USEPA, that pet waste, human waste, failing septic systems, wildlife and natural background are sources of fecal coliform loading to streams in urban watersheds (see amended project report Sections 5.1.1.1 and 5.1.1.2) This is validated by genetic ribotyping studies in the Central Coast Region, demonstrating that domestic pet waste contributes to fecal coliform loading in urbanized subwatersheds (e.g., Struve Slough, Los Osos Creek). Staff maintains that oberservational data and monitoring data collected in the central coast region and within the scope of this TMDL project area are sufficient to identify urban stormwater discharge as a probable controllable source. Within the central coast region CCAMP data collected from storm drains in the City of Salinas indicate frequent or routine exceedences of fecal coliform water quality criteria. CCAMP data is supplemented and validated by recent Water Board staff data from storm drain outfalls around the City of Salinas. Additionally, the City of Salinas monitors multiple stormwater outfalls; in their 2007-2008 Annual NPDES Report the City indicated that exceedences of fecal coliform and *e. coli* water quality criteria in stormwater outfalls are routine. The magnitude of those exceedences also tends to be very large. Numerous national studies by USEPA and others have confirmed the ubiquitous scope and nature of indicator bacteria loading from urban runoff. With respect to commenter's reference to potential site specific conditions and variations between various communities, please note that the proposed Basin Plan Amendment is intended to be flexible and adaptive enough to allow local municipalities or jurisdictions to report and demonstrate that they are meeting their load allocations.

Comment 45 – Santa Clara County

The staff conclusion in section 5.1.1.1 at the bottom of page 31 seems inappropriate since the validity of the assumption in Section 4.7 is questioned above.

Response to Comment 45

Qualitative lines of evidence, and preliminary conclusions were presented in the project report. It is not necessary to do comprehensive studies and data collection to

definitively conclude that pet waste, human waste, and wildlife waste are probable sources of bacteria entering storm drains in urban runoff. Please see Response to Comment 44.

Comment 46 – Santa Clara County

Section 5.1.1.2 has no data to support the conclusion stated in the opening sentence of the section. Please provide data to support the theory presented in the section.

Response to Comment 46

Staff changed the word "determined" to "concluded", so that the impression of definitive proof is not interpreted into the section the commenter refers to. Staff also included additional narrative in Section 5.1 to further clarify why urban runoff in the Pajaro River watershed is identified as a suspected or probable source of fecal coliform loading to water bodies. Comprehensive study and definitive investigation is not necessary to conclude that urban pet waste could reach storm drains via stormflows or other kinds of urban runoff.

It is widely acknowledged that urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes; pollutants which include viruses and bacteria from pet waste, failing septic systems, and other sources including natural wildlife sources (USEPA 2003). This is supported by genetic ribotyping studies in the Central Coast region (see Section 4.7 of the amended Project Report), which indicate that urbanized watersheds contribute pet waste, bird waste, and human waste to fecal coliform loads discharged to waterbodies (i.e., Struve Slough, Los Osos Creek, see Section 4.7).

Staff did not amend the Project Report with further lines of proof pertaining to this issue. Please note, the TDML development process requires the identification of probable or suspected sources of indicator bacteria loading based on observational and analytical data, and makes suggestions in the implementation plan about how sources these might potentially be mitigated by tabulating commonly acknowledged management practices. Identification of sources are based on lines of evidence including observational data, analytical data, modeling, and/or commonly accepted technical information about regional or local pollutant loading sources. These do not constitute rigorous scientific proof, nor are there specific on-site required and mandated mitigation management practices. The implementation activities, and assessment of local conditions and sources will be conducted by local jurisdictions who staff acknowledge have more intimate knowledge of local conditions.

Comment 47 – Santa Clara County

With regard to Section 5.1.1.3, please expand this discussion to provide additional data and scientific study to support the theories presented. The general statement that foraging wildlife defecate in close proximity to the area where they eat requires further explanation and justification. No additional information has been presented to support

the connection between anthropogenic activities of wash water and landscape runoff and controlling wildlife waste.

Response to Comment 47

Bird, wildlife, and rodent sources are generally considered natural and uncontrollable because their presence is generally not a result of human activities. However, bird, wildlife, and rodent sources are controllable to some degree. For example, these animals are attracted to trash dumpsters and areas where human activities involving food occur. Therefore, they are present partially as a result of human activities. Some of their waste can be controlled by managing those human activities. Staff acknowledges that there is uncertainty regarding the magnitude of the fractional bacteria load contributed by controllable wildlife waste. Although staff has not seen opossums, skunks or raccoons within areas that drain to MS4s in this watershed, staff has seen these animals in other municipalities and concluded that based on staff's best professional judgment, those animals are also within MS4 jurisdictions in the project area. Furthermore, staff has observed birds in municipalities in the Central Coast region and staff knows from experience that birds and these other animals are attracted by human activities. Staff determined that if an animal is attracted to an urban area by anthropogenic activity then the animal can be discouraged to some degree by modifying that anthropogenic activity.

Comment 48 – Santa Clara County

Section 5.1.1.4 has no data to support the conclusions stated. Please provide data to support the theory presented in the section. Modern dumpsters and private trash receptacles have attached lids and some include automatic closing mechanisms.

Response to Comment 48

Although staff has not seen leachate drainage from trash receptacles in areas that drain to MS4s in this watershed, it is widely acknowledged that maintaining trash receptacles in a sanitary condition prevents leachate from entering storm drain systems and minimizes the potential for the attraction of rodents, birds and wildlife. Please see *"Assessment of Sources of Bacterial Contamination at Santa Cruz Beaches"* County of Santa Cruz Health Services Agency (March, 2006). This report identifies proper maintenance of trash receptacles as a management practice to reduce bacteria loads. Staff's best professional judgment is that trash receptacle leachate is a potential controllable anthropogenic source in MS4 jurisdictions.

Comment 49 – Santa Clara County

Is Section 5.1.1.5 an attempt to use water quality standards as an enforcement tool for a social service and criminal law enforcement issue? Please clearly define the problem of homeless encampments along the entire reach of the Pajaro River, and it's tributaries, to provide an order magnitude of fecal coliform generated by this form of waste versus naturally occurring waste from wild and domesticated animals. This

section provides no additional information other than supposition to justify the use of water quality standards in this way, and the section should be rewritten to provide better justification for the use of dwindling public resources for this issue.

Response to Comment 49

Section 5.1.1.5 is not an attempt to use water quality standards for law enforcement.

Staff are required to identify probable or suspected sources of pollutant loading to impaired water bodies and assign waste load allocations and load allocations to responsible parties.

Comment 50 – Santa Clara County

Section 5.1.2 provides no basis for the conclusion that "cattle grazing lands are a source contributing to exceedances in water quality objectives" other than a few observed cattle in the San Benito River and cattle grazing adjacent for other water bodies in lands where cattle grazing is a matter of right. This section may require more research that provides species-specific contaminant loading to identify the cause of the E. Coli readings provided in the report.

Response to Comment 50

Please refer to the amended Project Report, Appendix A, Attachment 4.

Comment 51 – Santa Clara County

Cattle deposit fecal material wherever they are at the time. How is it expected to prevent this type discharge? If it means keeping cattle out of the drainages and streams (intermittent and permanent, as well as drainages and swales that only flow in peak rain events) that does not leave many areas for grazing. Large expenses in exclusion fencing and pumping/developing water sources for cattle and high expense in land managing of these areas without the use of cattle or herbicides (different prohibitions) can be expected.

Response to Comment 51

Please see Responses to Comments 2, 5, 6, 7, 9, 11, and 13.

Comment 52 – Santa Clara County

What portion of the overall impairment of the surface waters does the "infrequent and episodic" sewer discharges to the ground described in Section 5.1.4 provide?

Response to Comment 52

Screening level analysis presented in Appendix A Attachment 4 of the project report suggests that proportionally the impact is minimal, at least at the subwatershed scale

evaluated in the technical Attachment 4. This was a screening level analysis and may not extrapolate to other parts of the watershed. In short, the exact scope and extent of the contribution of sanitary sewer spills to loading is unknown.

Comment 53 – Santa Clara County

In the Recommended Stormwater Pollution Prevention Measures, how are items 2, 3, and 4 associated with fecal coliform? No relationship between these Best Management Practices (BMP's) and the introduction of fecal coliform into the surface waters has been presented in earlier sections of the report.

Response to Comment 53

Pollution Prevention Measure 2, 3, and 4 pertain to the discharge of water that has the potential to entrain fecal materials deposited on impervious surfaces, unless the wastewater is disposed of properly to the sanitary sewer.

Also, it is important to note that these measures represent a suite of suggested possible pollution prevention measures. The Water Board cannot mandate or designate the specific types of on-site actions necessary to reduce indicator bacteria loading, or to meet allocations by the various responsible parties. Specific actions or management programs must be proposed and implemented by responsible parties who are in the best position to assess local conditions.

Comment 54 – Santa Clara County

What portion of the overall impairment of the surface waters does the pet waste described on page 58 and 59 provide? No relationship between this action and the required ordinance and the introduction of fecal coliform into the surface waters has been presented in earlier sections of the report.

Response to Comment 54

The proportion of overall impairment due to pet waste is unknown. Because of the number of domestic pets in the urban areas of the watershed, and the amount of fecal coliform they produce on an individual bases, it can be presumed to be a load contribution.

Census Bureau data (http://www.allcountries.org/uscensus/424_household_pet_ownership_and_by_selected.html), for example, indicates that there are approximately 9,373 cats and 6,849 dogs in the City of Gilroy. Cats and dogs produce 5.0 E+9 cfu/day of fecal coliforms (USEPA, 2001). Or an aggregate total of 8.1 E+13 cfu/day. If even less than one per cent of that load was discharged to a small urban stream, it could represent a substantial daily load, or annual load. For instance, if only one half of one percent of all domestic fecal coliforms from pet waste in Gilroy got into the storm drain system, that would be a stream load of around 4 E+11 cfu/day, which would represent a substantial degradation of the assimilative capacity of a stream on the hydrologic scale of Llagas Creek (see Appendix

A, Attachment 4 of the amended Project Report). It is therefore presumed, that improperly managed pet waste could potentially degrade the assimilative capacity of an urban water body to a significant degree.

Staff did not have sufficient flow data geographically to estimate proportional load contributions from various sources. But, at the local or subwatershed scale it may be possible to make some empirical estimates of source loading (see amended Project Report, Appendix A, Attachment 4), depending on data availability.

Comment 55 – Santa Clara County

In the Public Education Section, what level of public education about homeless encampments is intended? Again, the issue of homeless encampments is a social service and criminal law enforcement issue, and it seems inappropriate for the storm water quality professionals and the general public to address this issue without assistance from qualified law enforcement personnel.

Response to Comment 55

The Water Board cannot require specific actions, but staff anticipates that public education could include providing information to the public, including the homeless, regarding sources of fecal coliform and associated health risks of fecal coliform in surface waters of the Pajaro Watershed, and actions that individuals can take to reduce pathogen loading in the Watershed. Signage, ads, and other low-tech public education and outreach efforts could be possible. Possible structural actions could include fencing, porta-potties, etc. Municipalities are in the best position to evaluate and identify the magnitude and scope of their local homeless populations, and to what level and extent this can be addressed as a controllable source. Staff acknowledges that the issue of homeless encampments is a complex and delicate issue. However, please note that Staff must identify and acknowledge all probable sources of fecal coliform loads in the watershed that are contributing to water quality impairment.

Comment 56 – Santa Clara County

In the New Development Section, how will the introduction of low impact development principals and practices reduce the introduction of fecal coliform into the affected waterways? No data to support the conclusion has been provided in the previous sections of the report.

Response to Comment 56

Fecal indicator bacteria are largely loaded to streams by overland flow, direct deposition in streams, or flow via impervious surface in urban areas. Low impact development that includes disconnecting impervious surfaces or building green spaces amongst impervious surfaces in new development will interfere with current pathways of flow via impervious surfaces. Fecal indicator bacteria are unlikely to be discharged to streams in

any substantial way via percolation into the ground and subsequent subsurface baseflow discharge to waterbodies.

Comment 57 – Santa Clara County

The Economic Considerations Section (Section 12.4) is incorrect and based upon the implementation of an NPDES Permit, not the implementation of the proposed TMDL. The actual cost of the TMDL program appears unknown. This section also implies that this NPDES Phase II Permit will include the entire Southern Santa Clara County, not just rural unincorporated "San Martin" as prescribed by the "automatically designated community" label assigned by the Board. This ambiguity creates confusion to Santa Clara County Staff as to the scope of the SWMP and NPDES Phase II Permit

Response to Comment 57

Cost estimates for incorporating a pathogen-reduction program into SWMP program were provided in Section 12.4.1 of the Project Report.

With regard to the comment pertaining to the scope of the NPDES Phase II Permit, staff has conferred with Water Board stormwater staff, and stormwater staff has contacted the commenter via telephone on February 11, 2009 to clarify this issue. In short, the TMDL applies to Pajaro River Watershed. Responsible parties within the boundaries of an Municipal Stormwater Permit must comply with the requirements of the permit. Owners and operators of lands containing domestic animals (such as rangeland, farm animal operations, and hobby ranches) that do not drain to MS4s are regulated under a separate regulatory mechanism, namely the proposed Domestic Animal Waste Discharge Prohibition, and are not required to comply with requirements of the Municipal Stormwater Permit.

Comment 58 – Santa Clara County

In Section 12.4.4, additional research is needed to differentiate the contributory load from small-parcel, confined livestock operations versus grazing operations that utilize large acreages and far lower stocking densities. This differentiation is critical as the primary control measure suggested in the TMDL Report is exclusion barriers. The high cost of exclusion fencing could easily become prohibitive for rangeland operations that graze livestock on large acreages.

Response to Comment 58

The proposed Domestic Animal Waste Discharge Prohibition does not require exclusion barriers. Staff believes the Discharge Prohibition would be achievable as it affects the management of livestock and domestic farm animals for which there are various affordable land management, and livestock management options to control and/or treat runoff. Also, please refer to Response to Comment 9.

Comment 59 – Santa Clara County

From Dr Wuertz's analysis, the statement "*There is substantial uncertainty as to the ability to distinguish between natural and controllable sources of fecal pollution.*" has not been addressed by Water Board Staff. Board Staff should be able to make assumptions about this topic and recognize uncertainty.

Response to Comment 59

Please refer to Appendix A, Attachment 4 of the Project Report. Staff will also include regrowth of bacteria in sediment as a potential natural source in the Project Report. Dr. Wuertz reported in the peer review that the nature and scope of this source is largely unknown at this time. This, however, does not preclude taking actions to reduce the controllable fraction of fecal indicator bacteria. The Project Report, Section 12.2 states that "Responsible parties may also demonstrate that although water quality objectives are not being achieved in receiving waters, controllable sources of pathogens are not contributing to the exceedance. If this is the case, the Central Coast Water Board may re-evaluate the numeric target and allocations. For example, the Central Coast Water Board may pursue and approve a site-specific objective. The site-specific objective would be based on evidence that natural, or background sources alone were the cause of exceedances of the Basin Plan water quality objective for pathogen indicator organisms."

Comment 60 – Santa Clara County

Water Board Staff assert the need for conservative assumptions but have not presented any supporting technical analysis. Further, Staff appears to have ignored the basic conservative assumptions inherent within the development of the fecal coliform water quality objective

Response to Comment 60

Staff did not ignore the implicit margin of safety established in the water quality objectives. Per the Project Report, Section 10, a margin of safety has been established implicitly through the use of protective numeric targets, which are the water quality objectives for the Pajaro River watershed's beneficial uses. Establishing concentration based load allocations is implicitly conservative, as the load allocations are protective of beneficial uses across all flow regimes.

Comment 61 – Santa Clara County

Staff responses focus on concentration vs. mass arguments and ignore this element of the reviewers comment and just assert uncertainty, lack of information, and need for conservative limits. Further exploration is required throughout the document, as Staff has presented no justification to accept the theory presented.

Response to Comment 61

In practice, the inherent nature of pathogens in the aquatic environment, the fact that the water quality objectives are applied to indicator organisms rather than to actual pathogenic organisms, and the lack of sufficient information on flow, all contribute to staff's use of concentration-based, rather than mass load-based TMDLs for pathogens. Also, please refer to Response to Comment 3. Addtionally, there is a incremental addtional cost and effort responsiblie parties would incur in meeting a mass based load allocation would in include collection, analysis, and assimilation of quantitative flow data.

Comment 62 – City of Gilroy

There is no argument with the goal of protecting the Pajaro River Watershed from pollutants of concern, including organisms such as fecal coliform. However, establishing a numerical limit value at this time has serious consequences to the City and SCRWA. It is recommended that as part of the SWMP process, prudent and achievable practices (i.e. BMP's) be established to prevent pollutants, including fecal coliform, from entering the storm water. Efforts should continue to better identify and understand sources, and determine of how levels of fecal coliform are best measured and evaluated. Additionally, under the current economic situation, the City and community are under serious financial constraints. Establishing a TMDL will add significant costs which will compound the financial problems, and may not achieve any improvement in water quality.

Response to Comment 62

Staff concurs that there is uncertainty with regard to the scope and magnitude of the load contribution from uncontrollable natural sources. Please see Response to Comment 1. Please also refer to Appendix A Attachment 4 of the Project Report.

Additionally, please note that Staff has tried to provide adaptive flexibility in the proposed implementation plan. Numeric targets and load allocations may be revisited and revised in the future, if monitoring data and implementation actions warrant.

To date, there are no TMDLs and corresponding implementation plans in the state that have progressed through their entire implementation period. Therefore, Staff has not observed the effects of any other implementation plans on water quality, and Staff cannot predict that the TMDLs and allocations cannot be achieved. Also, because this is a 303(d) listed waterbody, the Water Board is mandated to develop TMDLs and allocations. Regarding cost, the Water Board acknowledges the serious financial situation of implementing parties, and encourages proposals for low-cost and effective management practices.

Comment 63 – City of Gilroy

Adopting the TMDL now will hold the municipality accountable for fecal coliforms in the Pajaro River, regardless of the source. The Scientific Peer Review of the TMDL by

Stefen Wuertz, Ph. D. indicates that there are many natural and anthropogenic sources to the river and these have not been clearly identified and quantified for their relative contribution. This is a significant point because if the sources are not understood, it is doubtful that the City could significantly reduce fecal coliform levels if the non-controllable source contribution greatly exceeds the controllable fraction. It could potentially engage the City and Regional Board in enforcement proceedings as a result of violation of the TMDL. This would not only have a negative financial impact but could exhaust limited resources that could be used to address pollution control by use of BMP's and improved studies by both entities.

Response to Comment 63

Under the proposed Basin Plan Amendment the City is responsible for assessing and reducing source load contributions from controllable sources within its jurisdiction over a 13-year timeframe. The City is not responsible for load contributions from uncontrollable natural sources and is not expected to control all sources in its jurisdiction immediately or even within a few years. Please see Response to Comment 54 and Response to Comment 1.

Comment 64 – City of Gilroy

The TMDL proposed includes the goal of the recreational uses (REC-1) for the river. The Pajaro is a relatively small watercourse (~10M width) and inaccessible for recreational use. While at the mouth of the river such a criteria may be desirable, for the rest of the river this places a inordinately high burden when sampling river reaches. A methodology should be established when determining adverse levels for other reaches of the river. For instance permanent and migrating birds and other animals live and defecate within the Pajaro watershed. Because of the Pajaro's use as a natural water habitat, it may not be suitable for human recreational use. If the habitat use introduces fecal coliform, this needs to be accounted for in sampling methods and in the setting of the TMDL itself. It is important that the public resources in Gilroy be targeted at dealing with controllable pollutants as a result of municipal and urban activities. It is recommended that this issue be studied more and provisions included that allow for the elimination of natural sources from the TMDL.

Response to Comment 64

Please refer to Response to Comment 35 with respect to the REC-1 Beneficial Use designation.

Also, please refer to Response to Comment 1 with respect to natural uncontrollable source load contributions.

Staff notes that The Project Report, Section 12.2 states that "Responsible parties may also demonstrate that although water quality objectives are not being achieved in receiving waters, controllable sources of pathogens are not contributing to the exceedance. If this is the case, the Central Coast Water Board may re-evaluate the numeric target and allocations. For example, the Central Coast Water Board may

pursue and approve a site-specific objective. The site-specific objective would be based on evidence that natural, or background sources alone were the cause of exceedances of the Basin Plan water quality objective for pathogen indicator organisms. Also, with regard to addressing beneficial uses, Staff, other Regional Boards and the State Board have been evaluating establishment of a limited REC1 water quality objective that allows higher levels of bacteria. Staff determined that the need to adopt a TMDL based on current water quality standards in order to initiate control of controllable sources outweighed the benefit of taking more time to develop the data and information to support a new beneficial use category, designation and water quality objective. However, that possibility remains on the table for future consideration

Comment 65– City of Gilroy

The data presented by CCAMP indicates that there is a strong relationship with total suspended solids (TSS) and fecal coliform/E. Coli values in the waters of the Pajaro watershed. The data also indicates that there is an interaction of measured fecal indicator bacteria (FIB) levels and flow (occurring when the flows are the highest and most turbulent). The geomorphology (i.e. rocky or sediment stream bottom) and hydrodynamics (i.e. stream width, water velocity, turbulent flow) of the area may determine the amount of sediment load and hence FIB in the tributary being sampled. However, sampling done by SCRWA at its sampling locations seemed to indicate more fecal coliform during the dryer seasons (perhaps due to stagnation, evaporation, and concentration), and significant decrease with flows. This difference should be investigated before trying to meet a quantitative numerical limit.

Therefore, not only should there be more studies of how to measure the fecal coliform, but also how to interpret the data. Setting the TMDL without understanding the ways fecal coliform enters the watershed, and how that relates to sources, could result in significant mis-direction of resources.

Response to Comment 65

Staff concurs that the nature of bacterial loading to waterbodies may include high load conditions such as first flushes, high flows, and low flow stagnant conditions. Please note, the Basin Plan Water Quality Objective for fecal coliform (i.e., the proposed numeric target in this TMDL) is not a “never exceed” water quality criteria. The water quality objective of 200 MPN/100 mL is applied as a geometric mean of five samples collected in a 30-day period. This is intended to account for fluxes from storm events or periodic stagnant conditions. It is important to note that, unlike the arithmetic mean, the geometric mean is a statistical function that is less affected by extreme or anomalous values and is useful for evaluating skewed data sets.

Please refer to Response to Comment 1, and Appendix A Attachment 4 of the amended project report. Load duration analysis broadly suggests that exceedences of the fecal coliform numeric target is exceeded over all flow conditions, suggesting that a wide variety of point sources or direct deposition into streams; non-point sources, and natural

background conditions are all contributing to degradation of the assimilative capacity of water bodies in the watershed.