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Via Electronic Mail
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RE: Carlsbad Desalination Project
April 8, 2009, Agenda Item 13
Environmental Groups' Supplemental Technical Comments
Response to Scott Jenkins' Note on Regional Board Staff Concerns Regarding Rainfall Effects on Impingement per RWQCB Staff Report of March 27, 2009

In the March 27th Staff Report, staff presented three reasons why Poseidon's rainfall flushing theory did not appear to be the cause of the elevated impingement rates on two sampling days (January 12th and February 23rd in 2005). (March 27th Staff Report at 14-15). A summary of those reasons is also provided in the Supplemental Staff Report. (April 3rd Staff Report at 5). Staff further provided a "plausible alternative" explanation that impingement rates were associated with unique operational circumstances and minus tides. (March 27th Staff Report at 15). The Supplemental Staff Report posits another, highly plausible, alternative related to dredging activities. (April 3rd Staff Report at 5).

The following comments address Scott Jenkins' latest submission on April 3, 2009, which is an attempt to discount staff concerns and alternative theory from the March 27th Staff Report. ("Jenkins' Response"). Jenkins' Response fails both to discredit staff comments and to bolster the rainfall flushing theory. It should also be mentioned, even if Dr. Jenkins was able to conclusively disprove staff's alternate theory for the two higher impingement rates, this would in no way validate Poseidon's theory. As mentioned in our previous comment letter (Coast Law Group Supplemental Comments, April 6, 2009), the rainfall flushing theory is unsupported. Staff reiterates, though there may be enough data to prove abnormal rainfall on a given sampling day, the same is not true for impingement rates, or for correlation between rainfall and impingement. (April 3rd Staff Report at 5).

Staff Concern #1

Staff points out that heavy rainfall is not always related to higher impingement rates, as seen during the October 2004 rains. (March 27th Staff Report at 14). Dr. Jenkins presents a new theory to explain why the heavy October rains did not cause higher impingement: the October rains were the first rains to end the dry season and therefore the soil was able to absorb this rainfall. Thus, there was no discharge into Agua Hedionda Creek, and subsequently Agua Hedionda Lagoon (Jenkins Response at 1). Dr. Jenkins states, "corresponding flow volumes in Agua Hedionda Creek were not nearly as large as those recorded during the two five-day rain events that preceded impingement on [January 12 and February 5, 2005]." (Jenkins Response at 1-2). The only reference given for this assertion is Dr. Jenkins' previous submission on March 19th, 2009.

The March 19th submission ("Original Jenkins") is illuminating, but not for the reason presented by Dr. Jenkins. The prior submission contains a diagram (Figure 3(b)) created by Dr. Jenkins to show the relationship between precipitation and creek flows. (Original Jenkins at 8). This graph was

prepared using rainfall data from NOAA and discharge data from Tetratech (Original Jenkins at 8). The graph is explained: "Note each rainfall event produces a corresponding peak discharge event in the creek, except during a portion of the winter of 2006 when no flow data was collected." (emphasis added)(Original Jenkins at 8). Thus, Figure 3(b) shows flow rate in the Agua Hedionda Creek versus rainfall, with no qualification concerning first rains of the season or soil moisture. The next graph, Figure 4, shows daily discharge flows from Agua Hedionda Creek during the impingement study. (Original Jenkins at 9). This diagram (created by Dr. Jenkins) clearly shows high flow rates from Agua Hedionda Creek in October. *Id.* In fact, the October rains produced the highest Agua Hedionda Creek flow rates. Id. Moreover, the San Diego MS4 Permit copermittee sampling data from 2004 and 2005 shows Agua Hedionda Creek actually had more flows in October than in February. (See Appendix A: Hydrographs, submitted herewith).

Dr. Jenkins' other point, that the October rainfall was short in duration, lasting only one day, seems incorrect. (Jenkins Response at 1-2). His reference to Figure 1 is not helpful, as the x-axis data points are given in 2-month intervals, making it difficult to decipher exact data sets. (Jenkins Response at 5). Further, Dr. Jenkins labeled only certain days on the graph, not including the October rainfall event. *Id.* Notwithstanding these difficulties, the data seems to show the October rain event did comprise of more than one day of rainfall and resulted in a high volume of precipitation. *Id.*

Thus, Dr. Jenkins has cherry-picked the data he would like to explain (ie. higher impingement rates on January 12th and February 5th), and designed a theory to reach the desired result (ie. Poseidon's desired result). His own hydrographic rating curve and daily discharge diagram belie "dry ground" theory. Either his original data set is flawed, undermining the credibility of that dataset and his new theory; or, his new theory is flawed, undermining the "dry ground" explanation as well. Either way, Jenkins' theories don't match up.

Staff Concern #2

Staff correctly points out that after the January 12th and February 5th sampling points, the next three highest impingement rates correspond to dry days (ie. no rainfall). In addressing this criticism of the rainfall flushing theory, Dr. Jenkins cannot seem to make up his mind. He first states a comparison of the next three highest impingement days (dry days) is inappropriate because "the amount of biomass impinged at the intake on the next three highest days was minor in relation to the amount observed on the outlier days." (Jenkins Response at 2).

However, Jenkins then finds it entirely reasonable to take the next five highest impingement days (which did correspond to rainfall) into account (even though they would be even less appropriate to consider since they would be even more minor compared to the outliers). He concludes, "[i]n fact, rainfall occurred during or immediately before 7 of the 10 highest impingement samples." (Jenkins at 2). Here, Dr. Jenkins has conveniently decided to focus on the top 10 data points (days with highest impingement rates) to "dilute" the data.

One could just as easily narrow the focus to the top 5 highest impingement rates, resulting in an entirely different conclusion: 3 of the 5 days highest impingement days correspond to dry weather! Dr. Jenkins fails to discount staff's criticism, much less prove Poseidon's theory.

Staff Concern #3

Dr. Jenkins here says staff "speculates" that tides cause higher impingement. (Jenkins at 3). Staff is not nearly as cavalier as Jenkins in using minimal data to draw sweeping conclusions as to the origins of impingement. In the March 27th Staff Report, staff merely pointed out the flaws in Jenkins theory, as other trends also lead to another "plausible alternative explanation." (March 27 Staff Report at 15). In discounting staff's theory, Jenkins fails to account for tides and flows preceding impingement sampling days, as impingement samples were taken about once a week. Thus, fish or invertebrates impinged on day 1 would not be counted until day 7. Simply looking at the tides on the sampling day is therefore uninformative. (Jenkins Response at 3, 6-7).

Here again, Dr. Jenkins asserts "a clear relationship is shown to the extreme rain events." (Jenkins Response at 3). As explained above, there is nothing clear about the relationship, and even if the theory "held water" it still would not prove the rainfall was the cause of the impingement. Moreover, Jenkins assumes the two theories are mutually exclusive and if staff's tidal theory is incorrect, the rainfall flushing theory must be correct. (Jenkins Response at 3). This frighteningly narrow assessment discounts all other possible theories, and misses the most obvious one- EPS intake caused the impingement. Whatever the surrounding circumstances, ultimately those organisms were impinged by the EPS intake.

Lastly, Jenkins can't seem to explain away the correlation between higher impingement rates and large tidal ranges, so he merely states "[to the extent this [advection of additional species into the lagoon] is true, the relatively high impingement observed on those days may have more to do with local fish abundance than with EPS intake operations." (Jenkins Response at 4). No further explanation is given. Apparently Dr. Jenkins places the blame for impingement on the fish for daring to frequent the lagoon more than usual. The fish should have known the EPS was operating intake pumps that day.

Conclusion

As Dr. Jenkins has provided no additional insight into the rainfall flushing theory posited by Poseidon and has failed to counter any of staff's criticisms, both staff and Dr. Raimondi's concerns remain relevant. Poseidon's unsupported theory does not provide a basis for discounting the January 12th and February 23rd, 2005 impingement data.

Submitted to the Regional Water Quality Control Board April 7, 2009.

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