



August 2, 2011

David Beech  
1450 Manor Road  
Monterey, CA 93940

**SUBJECT: Response to Questions Regarding Flores/Pisenti Well #2 Well Testing**

Dear Mr. Beech:

This letter addresses your June 27, 2011 email to Henrietta Stern, as clarified in your June 29, 2011 email, requesting response on questions regarding the Monterey Peninsula Water Management District (MPWMD or District) Water Distribution System (WDS) process as related to the March 22, 2011 Bierman Hydrogeologic report prepared on the testing of the Flores/Pisenti Well #2<sup>1</sup>.

**Questions and Responses**

We have paraphrased your questions below, followed by our responses that supplement the responses provided with Henrietta's June 27, 2011 email reply to you.

**Question:** Provide documentation that specifies and justifies standard formulas for calculating reduction in pumping rate for Well #2 as shown on page 18 of the Bierman Hydrogeologic report.

**Response:** The calculation used in this report reduces the calculated well yield by the amount of water-level recovery below 95% after two times the pumping period had elapsed. This calculation is consistent with past administrative practice used by MPWMD to provide additional conservatism in cases where 95% water-level recovery is not achieved after two times the pumping period has elapsed. This practice is based on the MPWMD's experience in evaluating a large number of aquifer tests and analyses conducted as part of a comprehensive hydrological study of wells completed in nearby fractured rock environments<sup>2</sup>.

**Question:** Provide details or links to last five instances where a permit has been approved for a well with a two-cycle recovery of 54.42% or less.

**Response:** Review of the MPWMD WDS permit files indicates that there are no instances whereby MPWMD WDS permits for fractured-rock supply wells have been approved with two-cycle recoveries of 54.42% or less. The closest instance is for a two-cycle recovery of 59%.

<sup>1</sup> Bierman Hydrogeologic, March 22, 2011. *72-Hour Constant Rate Well Pumping, Aquifer Recovery Test and Pumping Impact Assessment for Flores/Pisenti Well #2.*

<sup>2</sup> Camp, Dresser & McKee Inc., Balance Hydrologics, David Keith Todd Consulting Engineers, Geoconsultants Inc., Luhdorff & Scalmanini Consulting Engineers, March 1994. *Comprehensive Hydrological Study*, prepared for Rancho San Carlos, Combined Development Permit Application.

However, it should be noted that the relative efficiency of water-level recovery after pumping does not affect the calculation of drawdown projections in the vicinity of the pumping well, but does affect the subject well-yield calculation.

**Question:** Provide details or links to the last five examples of when a well permit has been denied for failure of the recovery requirement.

**Response:** This response follows up on the response provided in Henrietta's June 29, 2011 email, wherein she indicated she was not aware of any applications for which a WDS permit was not approved based on well-recovery data. Review of the permit files confirms that this is accurate.

### **Response on HydroMetrics Letter**

In your June 29, 2011 email you also commented that prior correspondence from MPWMD did not include reference to the opinions expressed in the June 3, 2011 letter from Mr. Derrik Williams of HydroMetrics, which you submitted with your letter dated June 7, 2011. It is my understanding that staff from MPWMD and our WDS review consultant, Pueblo Water Resources, have since had the opportunity to discuss the District's *Procedures for Preparation of Well Source and Pumping Impact Assessments* with Mr. Williams, and that the discussion provided a better working familiarity with these procedures as they were applied to the subject well testing, than existed at the time that his review letter was prepared. Notwithstanding, we are providing a brief summary of our review of the three issues provided in his letter, as described below.

**First Issue: potential impacts to Beech Well.** This issue centers on the estimated combined impact while both the Flores/Pisenti Well #1 and Flores/Pisenti Well #2 were being pumped simultaneously in October 2010, upon the Beech Well. The HydroMetrics letter correctly states that the cumulative estimated drawdown effect at the Beech Well due to this testing would be the combined estimates of drawdown from each of the pumping wells. It should be noted however, that the requirement for evaluation of the potential well pumping effects in the vicinity of a pumping well in the District's *Procedures* is based on drawdown projections over the course of a six-month simulated dry season well operation, which is not to be confused with the effect from pumping during short-term well tests, which are often conducted at higher flow rates than the equivalent dry-season well demand pumping rate. In this case, the pumping of the Flores/Pisenti #2 Well during the October 2010 testing was conducted at an average rate of approximately 6.27 gallons per minute (gpm) versus the projected dry-season average pumping rate of 1.16 gpm (with accounting for system losses). We concur with Mr. Williams' opinion that a controlled pumping test that monitors water levels in the Beech Well would be helpful to ascertain the direct measurement of drawdown effect at this location, the results of which can then be extrapolated to estimate the potential effect from actual seasonal (not short-term testing) operations. It is our understanding based on recent correspondence from Bierman Hydrogeologic that such testing was scheduled to begin on July 19, 2011, but that authorization was not provided by you for collecting water-level data from your well, so this testing has not yet been undertaken.

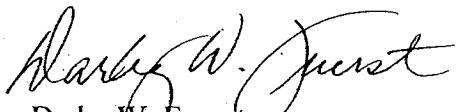
**Second Issue: observation of drawdown and recovery curves for Flores/Pisenti #2 test.** This issue concerns the explanation given in the Bierman report for the observed steepening of

the drawdown curve and incomplete recovery curve. We concur that the explanation given in the notes of the drawdown and recovery curves in Appendix D of the report could be interpreted to imply that although a negative boundary was encountered, the "fracture system did not dewater during the test". Based on our understanding of pumping tests in most fractured-rock aquifer systems, some degree of "dewatering" of fractures occurs at least temporarily as a result of water extracted during the test. We cannot definitively conclude what the report author intended to convey in this explanation. However, if it was intended to indicate that the "fracture system did not *completely* dewater during the test [emphasis added]", then we believe this would have helped clarify the description based on the observed water-level responses. It should also be noted that according to the District's *Procedures*, the steepening of the drawdown curve and incomplete recovery curve both affect the well-yield calculations by requiring reductions in the calculated well-yield; however, they do not directly affect the offsite drawdown impact calculations. Regardless of the explanation of the hydraulic dynamics of the test's water-level responses, the salient point continues to be that unless or until a controlled test can be conducted that includes water-level monitoring at or near the Beech Well, there will not be a better basis upon which to estimate the operational effect from the pumping well at the Beech Well location.

**Third Issue: calculation of reduced pumping rate on page 17 of report.** The concern is that the calculation shown on page 17 that reduces the "Post-Recovery Pumping Rate" to 3.03 gpm seems to suggest that that if the pumping rate is lowered to this amount, three days of recovery will result in 95% recovery to the pre-pumping static water level. This particular calculation is attendant to the Monterey County Health Department technical calculations section of the report and we cannot hypothesize if this is the intended inference from this calculation, as it might relate to the County standards. Nonetheless, we concur with the closing statement that "the true response can only be assessed with a 3.03 gpm aquifer test".

Please contact me at 831/658-5650 or [darby@mpwmd.net](mailto:darby@mpwmd.net) if you have any questions for which I can assist in directing additional response. For technical questions regarding the MPWMD testing and review procedures, the staff contact is Joe Oliver at 831/658-5640 or [joe@mpwmd.net](mailto:joe@mpwmd.net); for procedural questions about the application process, the staff contact is Henrietta Stern at 831/658-5621 or [henri@mpwmd.net](mailto:henri@mpwmd.net). Thank you for your cooperation in this matter.

Sincerely,



Darby W. Fuerst  
General Manager

cc: Richard LeWarne, MCHD (via e-mail)  
Henrietta Stern, MPWMD (via e-mail)  
Joe Oliver, MPWMD (via e-mail)  
Jonathan Lear, MPWMD (via e-mail)  
Robert Marks, Pueblo WR (via e-mail)  
Aaron Bierman, Bierman HydroGeologic (via e-mail)