

Maintaining recharge to springs and seeps downgradient from residential developments: An analysis from Bodega Bay, California

Chris White, Barry Hecht, and Gustavo Porras¹

A proposed residential project on a 27-acre parcel along the eastern shore of Bodega Bay includes most of the recharge area for a valued 1.6-acre freshwater seep wetland. Preliminary analysis in 1994 showed that changes in recharge could potentially affect the volume or duration of ground-water flow to the seep. The project was required to include design measures to maintain the volume and seasonal variation of flow sustaining this wetland, with no related methods or criteria specified. The County conditions also required hydrogeologic monitoring on the project site to identify potential changes in ground water recharge prior to, during, and after the two phases of buildout. Again, methods and criteria for both monitoring and evaluation were not specified.

The approach we developed to assess changes in volume and seasonality included:

- Proposing an expected change-in-ground-water-level curve early during the process which projected changes in ground water from year to year under baseline conditions,
- Monitoring ground-water levels to assess how the project might be changing ground-water levels,
- Scaling and installing mitigation measures in accordance with impacts as quantified from the year-to-year variability curve.

Monitoring has been conducted during 1995 and in 1999 through present, even though only portions of the project have been constructed. Additional measurements have been added to the original program to isolate effects of the limited construction to date. Results of and recommendations from the modeling and monitoring are presented, and compared with aerial photography and independent biological assessment of the adequacy of water supply in the wetland.

¹ Hydrologists/Hydrogeologists, Balance Hydrologics, Inc. 841 Folger Av., Berkeley, CA 94710 (510) 704-1000 cwhite@balancehydro.com

