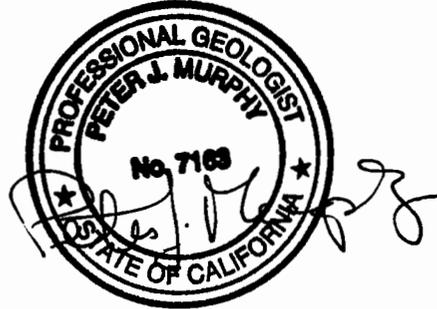


19 September 2006

Memorandum

To: Vuytowecz/Odmark Properties
From: Peter Murphy, P.G. #7163
Subject: Hydrogeologic Data Submittal
Club Estates Project TM5499; ER 06-03-003; KIVA 06-0062064
K/J 0683027.00



Introduction

This technical memorandum was prepared to transmit and introduce data that were requested by the San Diego County Department of Planning and Land Use (DPLU) in a 13 September 2006 meeting regarding the subject project (Project). DPLU subsequently made a formal request for this data in a letter dated 14 September. The requested data and associated graphics are attached.

Brief Hydrogeologic Setting

The Project is located in the Pauma Valley portion of the San Luis Rey Valley Groundwater Basin, a complex basin consisting primarily of alluvial and fluvial deposits that underlie the river valley to depths of several hundred feet. The site is located south of Palomar Mountain at the base of a large alluvial fan complex that originates in a series of canyons. According to DPLU's Groundwater Limitations Map annual precipitation on the upper, southwestern slopes of Palomar Mountain ranges from 24 to 36 inches; the most annual precipitation in San Diego County.

The riverbed of the now-ephemeral San Luis Rey River is present immediately southwest of the Project site. Stream flow in the San Luis Rey River near the Project has been controlled since Henshaw Dam was built on the river southeast of Palomar Mountain in the early 1920s. Water is typically not present in the streambed in the vicinity of the Project except during and after periods of normal or above normal precipitation.

Groundwater in the immediate vicinity of the Project is pumped by the Rancho Pauma Mutual Water Company (Company) from wells drilled into the alluvial aquifer to depths that are typically about 200 feet below ground surface (bgs). Standing water levels in Company's production wells over the past five years averaged about 80 feet bgs. Additional information on groundwater production and water levels are provided below.

Precipitation

Precipitation data (Table 1) for the immediate area of the Project were compiled by the Company for the period of 1952 through 2006. The Company reports that data from 1952 through 1986 were carefully measured and recorded by farmer at a location near the Company offices. Precipitation data from 1987 to the present were measured at the Company facilities.

Memorandum

Vuytowecz/Odmark Properties
19 September 2006
0683027.00
Page 2

Figure 1 illustrates the historic variability of precipitation reported by the Company. Figure 2 illustrates the departure of precipitation from normal which is taken to be the arithmetic average of the annual precipitation data reported by the Company, or 15.32 inches.

These graphs of precipitation are consistent with regional precipitation patterns. The periods of 1959 to 1977, 1984 to 1990, and 1999 to 2004 are periods of below normal precipitation that are separated by periods of normal to above normal precipitation.

Recent Groundwater Production

Water production by the Company since 1998 is summarized in Table 2. These data reflect production through the most recent period of below normal precipitation. The estimated increase in pumping that will be associated with the Project is 15 acre feet per year (i.e., 0.5 acre feet per dwelling per year for 30 dwellings), or about 0.5 percent of the average annual production during the period of 1998 to 2005.

Response of Aquifer

Standing (i.e., none pumping) water level measurements were routinely collected in Company wells from 1990 through 2006. These data reflect water levels in the aquifer prior to, during and after the most recent period of below normal precipitation. These measurements were routinely made with the pumps off in July of each year. Depth to water measurements for 13 individual wells are summarized in Table 3 and annual variations in standing water levels are illustrated in Figure 3. For comparison purposes, annual precipitation departures from normal are also shown in Figure 3. Changes in water levels relative to the earliest available measurements in each well (i.e., 1990, 1991, or 1992) are shown in Figure 4.

The precipitation and water level data for the monitored period illustrate that water levels in the Company's wells: (1) declined during the period of below normal precipitation and (2) rebounded to pre dry-period levels in direct response to above normal precipitation. Water level data for 1990 to 2006 illustrate a rapid recovery to pre dry-period levels after a single wet year (2005).

Project Well

The Project consists of 30 homes to be constructed on about 49 acres and includes a well that was completed in early 1991. Attachment A includes the following items for the well: 1) a completed Well Permit Application, 2) the Water Well Driller Report filed with the California Department of Water Resources, 3) a Hydraulic Test Report, and 4) a laboratory report for water collected from the well.

According to the well drillers report, the 15.3-inch diameter well was installed to a total depth of 303 feet bgs and is completed with perforations in the intervals of 115 to 120, 134 to 152, 184 to 220, and 230 to 245 feet bgs. The pump test data indicate that the well was pumped in three

Memorandum

Vuytowecz/Odmark Properties

19 September 2006

0683027.00

Page 3

steps of 197 gallons per minute (gpm), 218 gpm, and 243 gpm with 8.3 feet of drawdown from an initial standing head of 163.3 feet below measuring point.

A comparison of the laboratory analytical results for a water sample collected in September 2004 against primary and secondary California maximum contaminate levels (MCLs) indicate that the sample was below the primary MCLs for nitrate and copper, and below the secondary MCLs for sulfate, chloride, total dissolved solids, MBAS, iron, manganese, and zinc.

Enclosure(s)

Tables 1 through 3

Figures 1 through 3

Attachment A – Project Well Data

cc: Ogden Watson, Rancho Pauma Mutual Water Company