APPENDIX E - DRAFT TECHNICAL MEMORANDUM

TO: CKB ENVIRONMENTAL CONSULTING

FROM: GEOSYNTEC CONSULTANTS

SUBJECT: DRY WEATHER FLOW ANALYSIS

DATE: MARCH 12, 2007

This appendix summarizes and discusses measured dry weather flow published in the literature.

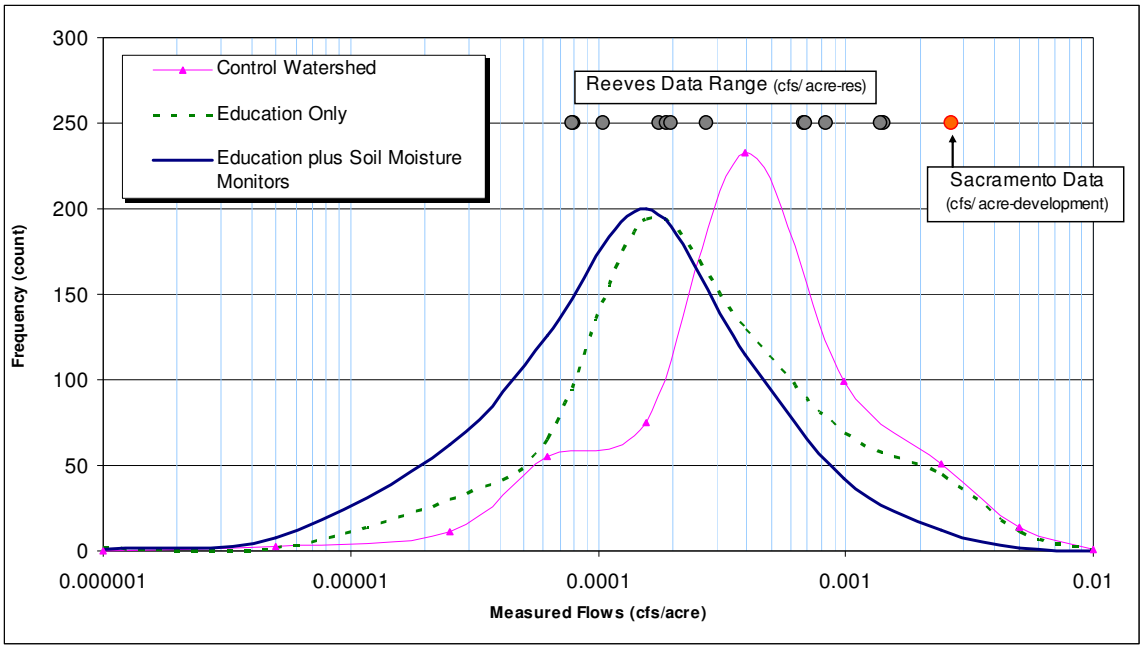
The quantity of dry weather flows from urban sources, such as car washing and irrigation systems is highly variable and not easily quantifiable. Literature indicates a wide range of dry weather discharges. Information from Irvine Ranch Water District suggests an average dry weather flows of 0.130 gallons per minute (gpm) per acre (IRWD 2003). Reeves et al. (2004) report dry weather flows in residential areas in Orange County ranging from 0.035 to 0.63 gpm per acre. Measured data from the Sacramento stormwater program estimates dry weather flows around 1.3 gpm.

Figure D-1 (a- b) present the frequency distributions of the measured daily flows for non-rainy days (IRWD 2003). Flows were measured from November 2000 to December 2002. Curves are provided for three BMP scenarios: control watershed (i.e., no BMPs), education, and education with soil moisture indicators on 1/3 of the lots. Reeves et al. (2004) data and Sacramento (1995) data are also shown for reference.

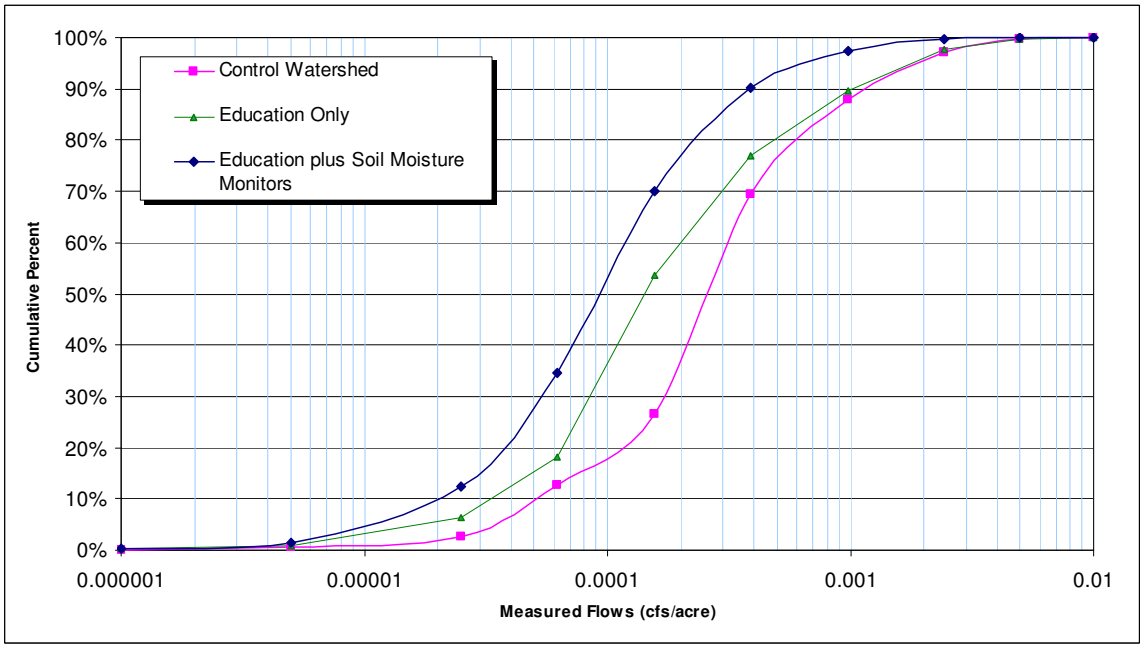
Figure D-1a illustrates which flows occur most frequently and how the three scenarios differ. For example, the most frequent measured flow for the no-BMP scenario is 0.0004 cfs/acre of urban area. The most frequent flow for the urban areas where education and soil moisture instruments were used was reduced to about 0.00015 cfs/acre. Although the most frequent values are about the same between the two BMP scenarios, the education plus soil moisture controls seems to be an improvement of education alone. Sacramento County data suggests that dry weather runoff is much more significant in the Sacramento region than in other regions of California. Measured dry weather flows from Sacramento urban areas in estimated to be 0.0027 cfs/acre.

Figure D-1b presents the cumulative frequency distribution and better illustrates the differences between scenarios. Considering the education plus soil moisture curve; the curve starts to rise around 10% to 20%, indicating an increase in the number of measure values at this magnitude of flow. Likewise, at about 90% the curves start to flatten off indicating a decrease in the number of measured values on this magnitude. The education plus soil moisture sensors scenario begins to rise earlier than the other two

scenarios, indicating a greater number of measured values in the lower flow range, which suggests an improvement of education alone or the control scenario.



(a)



(b)

Figure E-1. Frequency Distribution of Dry Weather Urban Runoff Data