Hilmar SEP
First Quarterly Report to the Central Valley Regional Water Quality Control Board

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Introduction

This report was prepared consistent with the SEP communications plan to keep the CVRWQCB staff, Hilmar, the peer review panel and the stakeholders panel apprised of status of the SEP. Progress is consistent with the project timeline. Tasks 1-3 are complete and Tasks 4 and 5 are underway. Task 6 will begin during the second quarter.

Task Status

Task 1 Expand General Scope of Work

This task has been completed. The agreements reached regarding scope and level of effort are reflected in the study design.

Task 2 Identify Public Outreach and Review Process

This task has been completed subject to agreement regarding the final communications plan. (See Attachment I). The Peer Review Panel and the Stakeholder Panel have been established. (See Attachment II). Both panels have had the opportunity to review and comment on the final study design.

Note that peer reviewer Keith Loague of Stanford, after providing initial comments, has resigned for health reasons. The study directors are seeking a replacement. The candidates include Hugo Loaiciga of UCSB, William Yeh of UCLA, and Wes Wallender of UC Davis.

A web site is under construction, which will provide access the study design document, the study timeline, the communications plan, quarterly reports as well as stakeholder and peer review comments.

Task 3 Develop Final Study Design

This task has been completed. A copy of the Final Scope document is attached. (See Attachment III). The final scope reflects comments from CVRWQCB staff, Hilmar, the peer review panel and the stakeholders panel. A timeline consistent with this design was also developed and is attached. (See Attachment IV).

Task 4 Characterize Wastewater Discharges from the Food Processing Industry

This task is underway. The status by subtask is as follows:

Task 4A Review and Synthesize Available Literature

This subtask is ongoing. Several literature reviews have been initiated.

Task 4B Collect and Combine Existing Data

Data for food processors and POTWs (with food-processing related activities) from the following counties have been collected: Madera, Merced, Stanislas, and San Joaquin. An extensive amount of data regarding discharge amounts and characteristics have been scanned and stored electronically. A template for storing discharge data was developed.

Task 4C Describe Food Processing Industry Wastestreams

Detailed descriptions are being developed based on the data collected in 4B.

Task 4D Develop GIS Database of Plant Locations

GIS-based land use maps describing both current and projected uses throughout the Central Valley are being collected. Attachment V summarizes the status of this effort. Attachment VI presents a map showing the location of food processors.

Task 4F Define and Develop Representative Areas (RAs)

The Modesto, Merced River, and Fresno/Kings River study areas (Attachment VII Fig. 1), were selected as candidates for numerical modeling under items 4F and 5.1A of the scope of work, because (1) they span a wide range of geologic conditions characteristic of the southeastern San Joaquin Valley where a majority of the food processors in the Central Valley are located, and (2) detailed geologic characterizations and groundwater flow models are developed for these regions. Final selection depends on further examination of site conditions and of the extent of the development work needed.

The Modesto Model domain (Attachment VII Fig. 2) is located in the alluvial plains between the Merced and Tuolumne Rivers, east of the eastern boundary of the Corcoran clay (or E-clay; see *Page*, 1986). Near surface deposits are contained within the Modesto and Rivernbank formations (*Burrow et al.*, 2004). The water table is approximately 15 m BGS. The available groundwater flow model area is approximately 100 km^2. Discretization of the geologic characterization is 72 m by 34 m in the horizontal, and 0.6 m in the vertical. The domain contains a total of 4,000,000 model cells. The current flow model is steady state.

The Merced River Model spans the Merced River northwest of Merced, CA and south of Turlock, CA. (Attachment VII Fig. 3) This Merced River Model region differs geologically from that of the Modesto Model most notably because the domain overlies the Corcoran clay (*Page*, 1986). Additionally, near surface deposits are comprised of recent river channel and floodplain deposits associated with the Merced River, as well as those contained within the Modesto formation (*Burrow et al.*, 2004). The water table is only a few meters BGS. The groundwater model area is approximately 10 km^2 and extends vertically from the surface to the Corcoran clay. Discretization of the geologic characterization is 40 m by 40 m in the horizontal, and 0.5 m in the vertical. The current flow model is steady state.

The Kings River Fan Model region is located on the high alluvial fan of the Kings River southeast of Fresno, California (Attachment VII Fig. 3). The region is situated far east of Corcoran clay and is collocated with the highest density of food processors in the San

Joaquin Valley. The alluvial fan is stream-dominated as it exits the Sierra Nevada into the San Joaquin Valley. Stratigraphic studies show that the aquifer consists of heterogeneous alluvial fan depositional sequences bounded by unconformities characterized as laterally extensive paleosols (*Weissmann et al.*, 2002). The water table ranges from about 5 m to 15 m BGS. The three-dimensional cell size is 100 m by 200 m in the horizontal, and 0.5 m in the vertical. The simulated region is 6300 m by 15,000 m by 100.5 m in the depositional strike, depositional dip, and vertical directions, respectively (the model area is approximately 95 km^2). The current flow model is steady state. At present, the model lacks a complete accounting for pumping within the domain. A more highly resolved inset model has also been developed for local scale transport studies within this region.

Task 4G Develop Growth Projections

Concurrent with the collection of the maps described in Task 4D, we are collection population and industry growth projections from local, regional, and state sources.

Task 5 Identify and Quantify Impairments to Beneficial Uses

This task is underway. Task 5.1 includes the development of numerical models for flow and transport in soils. Several models are currently being tested. Numerical modeling scenarios and conditions leading to favorable and unfavorable environmental conditions are under development. Task 5.2 will commence during the second quarter of the project.

References

Burow, K.R., Shelton, J.L., Hevesi, J.A., and Weissmann, G.S., 2004, Hydrogeologic characterization of the Modesto area, San Joaquin Valley, California: US Geological Survey Scientific Investigations Report 2004-5232, 54p.

Page, R.W, 1986, Geology of the fresh ground-water basin of the Central Valley, California, with texture maps and sections: U.S. Geological Survey Professional Paper 1401-C, 54 p.

Weissmann, G.S., Y. Zhang, E.M. LaBolle, and G.E. Fogg, Dispersion of groundwater age in an alluvial aquifer system, WATER RESOURCES RESEARCH, VOL. 38, NO. 10, 1198, doi:10.1029/2001WR000907, 2002.

List of Attachments:

I. Communications Plan
II. Peer and Stakeholders Members Lists
III. Final Scope
IV. Project Timeline
V. GIS Matrix
VI. Processor Location Map
VII. RA Maps