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STATE OF CALIFORNIA
CENTRAL COAST WATER BOARD
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California Regional Water Quality Control Board
Central Coast Region
895 Aero Vista Drive, Suite 101
San Luis Obispo, CA 93401

Attention: Mr. Hector Hernandez

Dear Mr. Hernandez:

RE: REVIEW OF OLIN EAST OF SITE CHARACTERIZATION REPORT

On behalf of the City of Morgan Hill (the City), WorleyParsons Komex has reviewed the Olin Corporation (Olin) September 29, 2006 Report, "East of Site Characterization" (the Report) for the Olin property at 425 Tennant Avenue, Morgan Hill California (the Site), submitted to the Central Coast Regional Water Quality Control Board (RWQCB). Below, please find a summary of major concerns with the Report, followed by additional detailed technical comments.

1) The Report does not meet the requirements of the RWQCB directive issued on July 24, 2006 to provide a work plan to fully characterize the lateral and vertical extent of perchlorate impacts to the east of the Olin Site and north of Tennant Avenue[1]. Although some general discussion of the installation of one, and possibly a second, multiple level piezometer is included in the Report, this does not constitute a work plan.

2) Additionally, the scope of work for investigation of perchlorate in the Deep Aquifer zones should not be restricted to a small, arbitrary rectangular study area, limited by Olin to Barret Avenue to the north. It is clear from historical information, data collected by Olin and even the findings in the Report, that perchlorate is present in the Deep Aquifer to the north and east of the Site both within and well beyond this rectangular study area. Constraining future investigation activities to only proposed locations PZ-05 and PZ-06 within the rectangular study area defined by Olin will not result in the delineation of perchlorate beyond this arbitrary area toward location PZ-03/MP-03, where perchlorate concentrations up to 4.4 ug/L have been detected in the Deep Aquifer Zone, and further to the north.

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[1] As you know the City maintains that the work referenced in this letter does not relate to the Northeast Contamination Area per se or the various issues raised by the City in past correspondence, meetings and hearings, as the proximity of the work is not significantly distanced from the Olin Site.

3) Incomplete data in the Report hampers any evaluation of Olin's analysis or conclusions. The Report has the following data deficiencies:

   a. No laboratory reports for perchlorate analytical results are included;

   b. Data included on figures are not given in any tables or appendices;

   c. Data appear to have been used in the interpretations presented in figures, however, values for data points are not shown in the figures; and,

   d. Data appear to have been used for some wells from the third quarter of 2006 sampling event, however, all pertinent third quarter, 2006 data are not included in the Report. It is presumed that these data will be made available when the third quarter report is released; however, third quarter perchlorate concentrations for all PZ/MP wells [including MP-3/PZ-3]) are critical to understanding the extent of plume migration in the Deep Aquifer Zone to north and east from the Site, and the corresponding delineation that is required. The absence of these data in the Report is especially troubling since wells in this area were not sampled by Olin in the second quarter 2006, and therefore, no data for these wells have been provided by Olin since the first quarter of 2006.

We see no reason why any of this information is being withheld, nor why it cannot be made available immediately.

4) The limited data presented in the Report do provide additional clear evidence that migration of perchlorate to the east and north of the Site in the Deep Aquifer has occurred and is continuing. These data include the detection of a historical maximum perchlorate concentration of 4.6 micrograms per liter (ug/L) at Deep Aquifer well PZ-02-0315 in the third quarter 2006, and the detection of 8.0 ug/L in the newly installed Deep Aquifer well PZ-04-335. In addition, the persistent detection of perchlorate at well PZ-01-333 after consecutive detections in the third and fourth quarters of 2005 and first quarter of 2006 also supports the conclusion that migration of perchlorate in the Deep Aquifer north and east of the Site is occurring.

5) It appears that Olin has changed perchlorate concentration reporting in this Report; although, because no laboratory data were provided, this is impossible to verify. Between May and July of 2006, cone penetrometer testing (CPT) and groundwater sampling were conducted by Olin at 24 locations, and 74 groundwater samples were collected. Based on Table 3-1 in the Report, there appear to have been no reported results designated as "J-Flags" (detections between the method detection limit (MDL) and the reporting limit (RL)). This is inconsistent with earlier CPT work by Olin, where J-Flag results were reported. It would be very surprising if, out of the 34 non-detectable results shown in Table 3-1, none had concentrations between the MDL (approximately 1.4 ug/L) and the RL of 4.0 ug/L, *i.e.* values that should have been reported as J-Flag detections. If J-flag detections occurred, then either: a) the laboratory did report J-Flag values and they were not tabulated for the Report; or, b) the laboratory was directed by Olin not to provide J-Flag values. In either case this is a serious deficiency, given the stated goal of this characterization "... to fully characterize the lateral and vertical extent of perchlorate impacts..." (Report page 2-1). The RWQCB should require that all laboratory data

relevant to the Report be provided immediately, and specify explicitly that all groundwater perchlorate analytical results include J-Flag detections. If the laboratory was directed by Olin not to provide J-Flag results, Olin should be directed by RWQCB to ask the laboratory for a quantification of J-Flag results, and to provide these data.

Again, we see no reason why any of this information is being withheld, nor why it cannot be made available immediately.

6) There are apparent anomalies in the methods used to plot and interpret data in the Report figures, as described below, with Figure 3-3 cited as only one example for illustrative purposes, since other figures contain similar anomalies. These anomalies include, but are not limited to:

   a. Contours should include the lowest level detected (*i.e.* to the MDL), not just the 4.0 ug/L RL, since the goal of contouring is to illustrate the extent of perchlorate impact to groundwater, as directed by the RWQCB.

   b. Some data points on Figure 3-3 are designated with symbols indicating "data used for contouring", however, no data values for these locations are shown. This is the case for wells MP-01-131, MW-11SA3, MW-10SA3, OW-01B2, MW-08SA3, CPT-OS-16-145, CPT-OS0141, CPT-OS-17-144.

   c. The contouring in Figure 3-3 appears to be erroneous. In particular, there are at least two data points (CPT-OS-44-140 and CPT-OS-20-114) with respective perchlorate concentrations of 20 and 12 ug/L; however, the contouring immediately around these data points indicates concentration ranges of 6.1 to 11 ug/L, not the 11.1 to 24.5 ug/L range which should have been indicated.

   d. Although difficult to verify, it appears that the contouring methodology used by Olin may be truncating contours, and that arbitrary contouring methodologies are being applied. This is best illustrated on Figure 3-3, where the northern edge of the green 4.0 to 6.0 ug/L contoured interval, just east of location CPT-OS-46, becomes a perfectly straight line running almost exactly east-west. It is unclear what data support such contouring since all relevant data values are not provided in Figure 3-3. It appears as though the 4.0 to 6.0 ug/L contour in this area may have been arbitrarily truncated, since there appear to be no data further to the north.

   e. Contouring in Figure 3-5 appears to be either biased or in error. Figure 3-5 shows a large expanse of unshaded area (< 4 ug/L) between location PZ-04/MP-04 (6.6 to 8.0 ug/L at PZ-04-335) and an isolated contour around PZ-02-315 (4.6 ug/L at PZ-02-315). Given that these two wells are completed in the same zone within 20 feet of the same depth, it is highly likely that the perchlorate plume is continuous between these two locations, and would be shown as such if this figure were contoured in any conventional manner. The apparent contouring error gives the impression that the detection greater than 4 ug/L at location PZ-02-315 is unconnected to the Site, and suggests a separate source of perchlorate in this area. The presence of any such sources needs to be clearly identified by Olin, as required by RWQCB Directives.

Alternatively, use of conventional contouring methodology would show a continuous perchlorate plume in the Deep Aquifer from the Site to PZ-02-315.

7) The additional wells proposed by Olin, shown in Figure 4-1 of the Report, at location PZ-05 and potential location PZ-06 (which may never be installed based on the criteria given in the Report), will not provide complete delineation of perchlorate north and east of the Site, as required by the RWQCB Directive of July 24, 2006. The proposed locations provide no delineation beyond the known occurrence of perchlorate at location MP-3/PZ-3, which Olin has excluded from all map areas within the Report. In particular, the RWQCB should order installation of at least three piezometers/multi-port clusters north and east of the rectangular study area shown on Report Figure 4-1, to delineate perchlorate contamination that has migrated to and beyond locations PZ-03 and PZ-02. These investigation activities should require that all laboratory analyses are reported with J-Flag detections, that all contouring be performed to the MDL level, and that the wells installed be sampled at least quarterly until the RWQCB has sufficient data to direct data change in sampling schedule. Such investigation is justified based on continuing northward and eastward hydraulic gradients in the Deep Aquifer, continued detections of perchlorate in the Deep Aquifer; at locations north and east of the Site above the MDL, and especially above 4 ug/L; and the detections of elevated perchlorate levels in Deep Aquifer at location PZ-04, as documented in the Report. As has been shown several times during the characterization process, if requirements such as quarterly sampling or reporting of J-Flags are not made explicit, these activities (which are in the best interest of full characterization) may not be completed by Olin.

WorleyParsons Komex is pleased to provide these comments to the RWQCB and we are at your disposal to discuss any of the issues noted above. If you have any questions or need additional information please call Mark Trudell at (714) 379-1157, extension 161.

Sincerely,
WorleyParsons Komex

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