California Regional Water Quality Control Board

Central Coast Region

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Linda S. Adams
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Governor

July 24, 2006

Mr. Richard W. McClure
Olin Corporation
Environmental Remediation Group
P.O. Box 248
Charleston, TN 37310-0248

Dear Mr. McClure:

SLIC: 425 TENNANT AVE, MORGAN HILL; FIRST QUARTER 2006 GROUNDWATER MONITORING REPORT

We have reviewed the April 30, 2006 *First Quarter 2006 Groundwater Monitoring Report, Olin/Standard Fusee Site, 425 Tennant Avenue, Morgan Hill, California* (Monitoring Report), submitted by MACTEC Engineering and Consulting, Inc. on Olin Corporation's behalf. The Monitoring Report was submitted in accordance with Monitoring and Reporting Program No. 2001-161 (MRP No. 2001-161).

The Monitoring Report presents the results of groundwater monitoring conducted by Olin during the First Quarter 2006 monitoring period. Olin's monitoring objectives are to further monitor and delineate the lateral and vertical extent of perchlorate, monitor perchlorate concentrations over time, determine groundwater flow directions within the aquifer zones of the Llagas Subbasin, and provide data to advance and improve the Llagas Subbasin hydrogeologic conceptual model. Our review included all aspects of the Monitoring Report. However, our concerns, approvals and recommendations concerning monitoring requirements and additional characterization activities related to the areas southwest, south and southeast of the Olin Site have been predominantly addressed in our June 29, 2006 response letter concerning Olin's March 29, 2006 *Llagas Subbasin Characterization Report* (Characterization Report). Consequently, these comments are limited to our review of recent groundwater monitoring results related to the areas east and northeast of the Olin Site.

Specifically, our review focused on *Appendix E - Northeast Groundwater Flow Assessment – Update.* Appendix E presents an update of the Northeast Groundwater Flow Assessment based on groundwater and perchlorate data collected in the Northeast Study Area during the first quarter 2006. As part of the groundwater monitoring conducted during the first quarter 2006, Olin agreed to collect a second round (fourth quarter 2005) of groundwater samples for perchlorate analysis in a Stipulated Conditional Stay (effective date of September 30, 2005) and volunteered to

collect a third round (first quarter 2006) of groundwater samples northeast of the Olin Site.

As addressed in our comment letter concerning the above referenced Characterization Report, we concur with your proposal to conduct further delineation and data gathering of the area immediately east of the Olin Site and north of Tennant Avenue. We appreciate Olin's proactive approach investigating the recent perchlorate detections in this area. We concur with the recommended cone penetrometer test (CPT) boring locations as depicted in Figure 11.1 of the Characterization Report. We understand that due to depth limitations associated with the CPT investigation, the focus of the additional delineation work is limited to the shallow and intermediate aquifer zones.

However, based on the groundwater monitoring results presented in the Monitoring Report, it is clear that perchlorate concentrations are present within the intermediate and deep aquifer zones immediately north and east of the Olin Site. We are concerned with the observed upward trend of perchlorate in some of the MP/PZ wells in the intermediate and deep aquifer zones. The Characterization Report reports perchlorate concentrations above 6.0 μg/L from recent CPT borings installed along and adjacent to Tennant Avenue. The first quarter 2006 sampling event reports concentrations of perchlorate above 6.0 μg/L at well location MP-4-088, in the intermediate aquifer, and at or above 4.0 μg/L at well locations MP-03 and MP-04 in the intermediate aquifer, and PZ-02, PZ-03 and MP-04, in the deep aquifer. Considering these results, additional characterization activities planned in the area immediately east of the Olin Site and north of Tennant Avenue must include delineation of perchlorate concentrations within the deep aquifer zone. Thorough characterization of this area is necessary to evaluate whether the detected perchlorate concentrations in this area are from the Olin Site.

We understand that Olin did not intend to continue monitoring the MP/PZ wells in the area northeast of the Olin site after the first quarter of 2006. However, based on the results presented in the Monitoring Report, we hereby request continued monitoring on a quarterly basis of wells MP/PZ-1, MP/PZ-2, MP/PZ-3 and MP/PZ-4. Additional monitoring is required to confirm the results and any upward trends in perchlorate concentrations. We understand the Monitoring Report asserts that another source of perchlorate must be responsible for the perchlorate detections in this area. We agree that further data collection and evaluation must be conducted to confirm the source(s) of the perchlorate concentrations detected in this area. However, considering the proximity of perchlorate detections to the Olin site and pending data supporting the contention that an alternate source of perchlorate is responsible, we require that Olin conduct the additional monitoring. Based on the additional monitoring results, we will make a determination as to whether any additional characterization activities or evaluations are necessary in this area.

Water Board staff provides the following specific comments, recommendations and requirements concerning the area north, east and northeast of the Olin Site.

1. **Appendix E, Section E4.0 Summary and Conclusions -** The seventh bullet in this section states, "...The MP-03-195 sample was collected from the lower portion of the

intermediate aquifer, located over 2,000 feet north of the Site. As groundwater in this aquifer has been consistently measured with a southward gradient, the detection at MP-03-195 strongly indicates that another source of perchlorate is or has been present north of this piezometer."

To date, the other potential perchlorate sources identified have not been investigated to determine if any of them are contributing to the groundwater impacts. Therefore, it is premature to imply that a source(s) other than Olin must be the cause of the groundwater impacts detected when the other identified potential sources of perchlorate have not been investigated or confirmed to impact groundwater. At this time and until it is confirmed with data, we must assume that it is plausible that the source(s) of perchlorate detections in this area could include the Olin Site as well as any of the other identified potential sources. As stated in our May 2, 2006 correspondence concerning responsibility determinations for perchlorate detections northeast of the Olin Site, "there is some evidence that Olin could be a source of perchlorate northeast of the Olin Site. We know a large mass of perchlorate discharged from the Olin Site and groundwater flow in the deep aquifer zone has been demonstrated to flow in a northerly direction under certain conditions".

Therefore, as a potential contributor to the groundwater impacts detected immediately northeast of the Olin Site, we hereby request that Olin collect additional quarterly perchlorate groundwater samples from all of the MP/PZ wells located northeast of the Olin Site.

2. **Appendix E, Section E4.0 Summary and Conclusions -** The eighth bullet in this section indicates there is no evidence that the Olin Site is the source of perchlorate detected at the Nordstrom Well and that it is far more likely that the perchlorate detected at the Nordstrom Well in 2000 and 2001 originated from at least one other source located further north and unrelated to the Olin Site.

   Our May 2, 2006 correspondence concerning responsibility determinations for perchlorate detections northeast of the Olin Site addresses this matter thoroughly and specifically.

3. **Appendix E, Section E4.0 Summary and Conclusions -** The ninth bullet states, "Recent findings by the RWQCB confirm that mushroom farms in the Llagas Subbasin constitute additional sources of perchlorate to groundwater, presumably from the use of bleach for sanitation practices."

   This statement is inaccurate. To date, the investigation activities conducted by Water Board staff have been limited to site inspections at several mushroom farms and the collection of water samples from wastewater ponds for perchlorate analysis. Although concentrations of perchlorate were detected at several of the wastewater ponds, there is no evidence to suggest that perchlorate is or has migrated vertically and impacted underlying groundwater. Investigation activities designed to confirm

whether perchlorate detected in wastewater ponds are impacting underlying groundwater have not been performed.

By **September 29, 2006**, please provide a work plan to perform the additional characterization activities necessary to fully characterize the lateral and vertical extent of perchlorate impacts in the area immediately east of the Olin Site and north of Tennant Avenue. As discussed above, we expect that the additional characterization activities will include delineation of the intermediate and deep aquifer zones in this area. The required plan must address the following items:

- A discussion of the CPT investigation performed to date. This section must summarize the results of all sampling performed in this area.

- Recommendations for the installation of additional CPT borings and monitoring wells (if deemed appropriate). If additional CPT borings or monitoring wells are proposed, provide proposed locations and depths.

- A proposed monitoring schedule. Remember, all new permanent monitoring points must be monitored on a quarterly frequency during a minimum one-year monitoring period.

The Water Board's requirements for additional groundwater monitoring of the MP/PZ Wells and a work plan are made pursuant to Section 13267 of the California Water Code. Pursuant to Section 13268 of the Water Code, a violation of a request made pursuant to Water Code Section 13267 may subject you to civil liability of up to $1,000 per day for each day in which the violation occurs.

The Water Board needs the required information in order to ensure that perchlorate concentrations detected immediately north and east of the Olin Site are fully characterized. The additional characterization activities will help evaluate whether the detected perchlorate concentrations in this area originate from the Olin Site and confirm the existence of a possible increasing trend in perchlorate concentrations at several well locations. You are required to submit this information because available data indicates that the Olin Site could be a source of perchlorate northeast of the Olin Site. More detailed information is available in the Regional Board's public file on this matter.

Any person affected by this action of the Water Board may petition the State Water Resources Control Board (State Board) to review the action in accordance with Section 13320 of the California Water Code and Title 23, California Code of Regulations, Section 2050. The petition must be received by the State Board, Office of Chief Counsel, P. O. Box 100 Sacramento, 95812 within 30 days of the date of this order. Copies of the law and regulations applicable to filing petitions will be provided upon request.

We appreciate your continued cooperation and proactive approach to conduct the requested additional monitoring and site assessment activities immediately northeast of the Site. We look forward to successful completion of all remaining characterization tasks. If you have any questions, please contact **Hector Hernandez at: (805) 542-4641** or via e-mail at: Hhernandez@waterboards.ca.gov, or Eric Gobler at (805) 549-3467.

Sincerely,

Harvey Packard

for Roger W. Briggs
Executive Officer

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cc via e-mail:
Ms. Lori Okun
Office of the Chief Counsel
State Water Resources Control Board

Olin Technical Contacts IPL

cc via U.S. Mail:

Olin Correspondence IPL