



June 5, 2007

Mr. Hector Hernandez
Central Coast Water Board
895 Aerovista Place, Ste. 101
San Luis Obispo, CA 93401

Subject: Comments on the Area I Extraction Well Installation Work Plan – Olin/Standard Fusee Site, 425 Tennant Road, Morgan Hill, California

Dear Mr. Hernandez:

The Santa Clara Valley Water District has reviewed the Area I Extraction well Work Plan prepared for Olin Corporation by Geosyntec consultants. We provide the following comments for your consideration:

Interim vs. Final Remedial Solution

The report states that there are several important design, logistical, permitting, construction, and other issues tied to how the treated water will be re-used, reinjected, or discharged. The District understands the challenge related to these factors; however, in order for remediation to commence, an *interim* solution should be implemented without delay. It is neither a regulatory requirement nor a well permitting requirement to participate in the District's *Treated Groundwater Reuse and Reinjection* program (TGRR). There is also no regulatory mandate to arrange for treated water to be used as drinking water. While this would be a favorable arrangement for the long term, there's no requirement to implement it for interim remediation.

To begin interim remediation, Olin should proceed with installation and operation of an extraction well and treatment system. On an interim basis, local reinjection or discharge to streams near the well site can allow operations to begin sooner than will be the case if Olin waits to secure right-of-way to pipe water back to the 425 Tennant Road site. While Olin's stated goal of seeking to obtain a solution that finds the highest end use of the treated water is laudable, Olin has not explored other interim alternatives such as portable treatment units. By focusing on the *final* disposition of the water at this point in the process, Olin will delay implementation of *interim* remediation. Delays due to permitting, right of way and land purchase agreements, legal agreements with the City of Morgan Hill, or satisfying the specific requirements of TGRR are all likely to contribute to substantial delay in beginning treatment of contaminated groundwater. A distributed treatment configuration with local discharge or reinjection can work as an interim solution until a permanent arrangement can be secured.

Recommendation: The Water Board should require Olin to work out interim solutions to permit remediation to begin sooner. The interim clean up should not be subject to resolution of the disposition of treated water, because delivery of treated water to the City of Morgan Hill or participation in the District's TGRR program is a discretionary action and not a regulatory requirement.

Shallow Zone Contamination Must Be Remediated

Olin reports dramatic reductions in perchlorate concentrations measured in the shallow aquifer, and concludes that shallow aquifer extraction in Area 1 is not required to meet the Area 1 remediation goals. The reported reduction in shallow aquifer perchlorate concentration might be considered encouraging news, but the data do not support this claim. The District believes the data are not sufficient to justify foregoing extraction in the shallow zone.

Olin attributes the reduction in shallow zone perchlorate to the performance of the on-site groundwater containment and treatment system, and the completion of soil remediation. However, the downgradient extent of the benefit from on-site treatment is constrained by the duration of operations since startup in 2004, and the groundwater flow rate. At a maximum, reductions attributable to on-site remediation are likely in only the first mile south of the site and more likely $\frac{1}{2}$ to $\frac{2}{3}$ mile; any shallow contamination further south has yet to experience a benefit from on-site treatment.

The CPT investigation profiled in the 2007 update to the Llagas Basin Characterization study presents data from aquitards that were found to contain higher concentrations of perchlorate, up to 550 ppb. It is important to monitor shallow aquifers adjacent to the aquitards which appear to be harboring residual perchlorate mass that could sustain problematic concentrations over the long term.

Not all shallow monitoring wells show a dramatic reduction in perchlorate concentrations. The table below suggests that there would be significant advantage to pursuing remediation in the shallow zone, and to further investigate whether perchlorate stored in aquitards is sustaining problematic perchlorate concentrations in the aquifers. Per Olin's stated strategy of pursuing the worst first, the shallow zone cannot be ignored. The Area I workplan provides a questionable conclusion that shallow zone extraction and treatment is not necessary, based on a partial indication of reduction of perchlorate close to the site. The District believes that it is likely that aggressive pursuit of elevated perchlorate concentrations in the shallow zone will yield long term dividends for overall remediation of perchlorate contamination in the basin.

Recent Shallow Aquifer Perchlorate Results

Location	October 2006 Result	February 2007 Result
MW-61-056	93 ppb	130 ppb & 140 ppb
MW-62-055	590 ppb	590 ppb
MW-63-057	200 ppb	160 ppb
MW-64-060	27 ppb	22 ppb

Recommendation: The Water Board should not permit a waiver of shallow zone remediation. Instead, the Water Board should require that Olin include shallow zone remediation in an interim cleanup action to start as early as possible. Water Board staff should carefully review the last year of shallow zone data, including CPT data, when weighing the degree of remediation appropriate to restore beneficial uses of groundwater in the Llagas groundwater subbasin.

Sufficiency of One Extraction Well per Aquifer Zone

The number of extraction wells proposed, one per aquifer zone, is almost certain to be insufficient to make a material difference to basin cleanup. To confirm that the proposed remedial strategy will be effective, pilot testing of extraction wells and distributed treatment with

local reinjection or discharge of treated water should be pursued to gather remedial performance data to support a long term design.

Recommendation: The Water Board should require that Olin demonstrate proof-of-concept for their proposed remedial strategy through the installation of interim treatment in the shallow and intermediate zones. The Water Board should also require that remedial performance data and analysis be collected and submitted to demonstrate the effectiveness of Olin's remedial plan, and adjusted, including installation of additional wells if necessary, as supported by the data.

Schedule for Interim Remediation

Finally, the Workplan does not include a schedule for interim remediation. While it is understandable that a long-term solution will take some time to develop and implement, a schedule of interim remediation goals should be submitted. Interim remediation of the highest concentrations in the shallow zone should begin in summer of 2007.

Thank you for considering the District's perspective on the Area I Extraction Well Installation Workplan.

Sincerely,



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Perchlorate Project Manager

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