California Regional Water Quality Control Board
Central Coast Region

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Secretary for Environmental Protection

Gray Davis
Governor

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October 6, 2003

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

Mr. Jay McLaughlin
President and CEO
Standard Fusee Corporation
PO Box 1047
Easton, MD 21601

Dear Mr. McClure and Mr. McLaughlin:

SLIC: 425 TENNANT AVENUE, MORGAN HILL; 45% DESIGN REPORT FOR FULL-SCALE REMEDIATION OF ON-SITE GROUNDWATER COMMENTS

The Regional Board has reviewed GeoSyntec Consultants' September 19, 2003, *45% Design Report for Full-Scale Remediation of On-Site Groundwater* (Report) prepared and submitted on behalf of Olin Corporation. The Report presents a preliminary plan for initiating on-site groundwater remediation including an Aquifer Test Workplan prepared by Mactec Engineering and Consulting, Inc. The Report provides the Regional Board an update of progress toward implementation of groundwater remediation at the subject site.

In summary, the Report indicates that Olin will install and operate two groundwater extraction wells with an associated ion-exchange treatment system for perchlorate removal. Following installation of the two extraction wells, two observation wells will be installed nearby and an aquifer test will be conducted to evaluate shallow groundwater hydrogeologic properties at the site. A proposed schedule for startup of the proposed groundwater extraction and treatment system is also presented. Our comments presented below incorporate comments provided by Santa Clara Valley Water District (District) and by Komex on behalf of the cities of Morgan Hill and Gilroy.

On-Site Groundwater Disposal

- Two disposal options for treated groundwater are listed: re-injection and infiltration through site soils. The discharge of water off-site via NPDES permit or through the sanitary sewer should be pursued to completion before system startup. This option is only mentioned in passing as a contingency. A more realistic approach is to assume that off-site discharge will occur most of the time. Olin should focus on off-site disposal of all treated groundwater until you have completed a thorough assessment of vadose zone geology, completed aquifer tests, performed groundwater modeling, evaluated remedial alternatives for impacted soil, and presented a plan for ensuring that on-site disposal will not result in increased off-site perchlorate migration.
- Infiltration and reinjection are both prone to clogging; the measured infiltration rate used to determine area needed for application of treated water will likely diminish over time due to swelling of clay minerals in the soil profile. Supporting information for the measured

infiltration rate was not provided, e.g., test duration, antecedent soil moisture conditions, size of test area, method of calculation, etc., precluding any interpretation of the reasonableness of this estimate by the Regional Board or vested stakeholders.

- The plan for on-site reinfiltration also assumes flow rates will remain in the low range estimated in the Initial Design report, i.e., about 40 gpm. We believe that the flows necessary to achieve containment will more likely be two to three times that, i.e., up to 120 gpm. Accordingly, the remediation plan should include viable off-site discharge and the necessary piping to allow switch over to this mode within the first week of operations should conditions warrant.
- The proposal to reinfiltrate water on the site may consume space that would otherwise be used for on-site ex-situ bioremediation of excavated soils from the hottest zones, requiring that excavated soils be hauled off to a landfill.

Evaluation of Hydraulic Containment

- Olin indicates that up to six new wells will be installed down-gradient of the site to assess hydraulic containment and changes to groundwater quality following the initiation of infiltration and/or injection. We believe that additional wells will be needed in the upgradient and cross-gradient directions because the hydrogeology of the site has not been assessed, and could be altered by infiltration or injection. The wells should be installed and monitored to gain baseline information prior to system startup.
- The Report acknowledges it may be necessary to install more than one extraction well per zone. We believe strongly that a minimum of two wells is required to provide reasonable assurance of capture in heterogeneous aquifers. All of the modeled assumptions and diagrams representing the Site Groundwater Remediation Plan appear to be based on assumptions of homogenous isotropic aquifer materials, whereas geologic data collected by Mactec clearly show otherwise.
- As proposed, the report should be called full scale containment rather than full scale remediation. The Plan does not propose to extract groundwater from areas of the site shown to have the highest concentrations of perchlorate in groundwater. Source removal does not appear to be an objective of this plan. Instead, well placement is selected on the southern boundary for the apparent purpose of containing contamination and limiting offsite migration. We strongly prefer a plan that prioritizes aggressive source removal.

Evaluation of Deeper On-Site Groundwater Contamination

- Currently there are only three locations on the site where wells are screened at depths greater than 200 feet bgs. Although only one of these had a detectable concentration of perchlorate during the most recent sampling, each of these wells has historically yielded groundwater samples with detectable perchlorate concentrations, including one sample collected from a depth of approximately 340 feet bgs that contained perchlorate at a concentration of 312 micrograms per liter. In our opinion, further assessment of deep (greater than 200 feet bgs) groundwater perchlorate concentrations is necessary before a decision is made to limit remediation of groundwater to a depth of 100 feet bgs.

Aquifer Test Plan

- We fully support implementation of the District's September 29, 2003, comments on the Aquifer Test Plan.

- Reporting of aquifer test data should include transmittal of the raw time-drawdown, flow, hand water level measurements, barometric, and other supporting data in electronic data deliverable format such as Excel, Microsoft Access, Oracle, or other common format to enable Regulatory and stakeholder review and analysis of aquifer test interpretations.

General Comments

- The 90% Design Report should include a Treatment System Startup Plan. The Startup Plan should advise how the system will be initially monitored to ensure proper performance, and how startup data will be communicated to the Regional Board and stakeholders. Samples should be collected weekly at startup until one month of satisfactory performance is measured.
- The proposed on-site disposal of treated water should meet requirements for the Santa Clara Valley Water District's Treated Groundwater Reuse and Reinjection Program, which would afford Olin Corporation measurable savings in groundwater charges refunded. We encourage Olin to consider enlisting in the plan.
- The quality of treated groundwater shall meet the treated groundwater criteria contained in the Regional Board's Resolution R3-2002-0115, General Waiver for Specific Types of Discharges, in order to be considered for a waiver of waste discharge requirements.
- The information presented in the cross-section on Figure 3 of the Report is inaccurate or misleading. The blue line indicating the potentiometric groundwater surface is shown intersecting wells 27H005 and 27H006 at slightly more than 300 feet above mean sea level (amsl). A close examination of the figure indicates that the groundwater elevations in these wells are 250 feet amsl and 267 feet amsl, respectively. If the potentiometric groundwater surface line were drawn correctly a greater component of eastward groundwater flow from the site would be apparent.
- The report was not signed by an appropriately registered professional. Please ensure future submittals are correctly signed.

Pursuant to section 13267 of the California Water Code, Olin and Standard Fusee are hereby directed to consider, implement or respond to the above comments and report the status of their implementation in the 90% Design submittal due on October 24, 2003. The Regional Board needs the status report to ensure timely, appropriate cleanup of soil and groundwater at the subject site. The evidence supporting this request includes data previously submitted by Olin demonstrating perchlorate contamination resulting from Olin's operations at the site. Failure to comply with requests pursuant to Water Code section 13267 may subject you to enforcement action, including imposition of civil liability in an amount up to $1000 per day of noncompliance.

Any person affected by this action of the Regional 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 within 30 days of the date of this order. Copies of the law and regulations applicable to filing petitions will be provided upon request.

If you have any questions, please contact **A. John Mijares at (805) 549-3696** or Harvey Packard at (805) 542-4639.

Sincerely,

Roger W. Briggs
Executive Officer

ajm/s/icb/cru/johnm/olin../rick mcclure comments 45% design report 3oct03

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