Meeting Notes: Community Advisory Group - Aerojet Superfund Issues, March,16 2011

1. Attendees

Janis Heple, Cindy Caulk (Aerojet), Jackie Lane and Kevin Mayer, (EPA), Travis Anderson (Golden State Water Co), Alex MacDonald (CVRWQCB), Larry Ladd, Jimmy Spearow, Stephen Nugent, Stephen Green and Burt Hodges (SARA) Claudette Altamirano (Recorder, Weston Solutions, Inc.).

2. The January minutes were approved with minor changes.

3. New Perchloarte Developments – Kevin Mayer, EPA

Mr. Mayer reviewed two new regulatory developments regarding perchlorate. Neither development is final. The first is development of a revised State public health goal for perchlorate and the second is that EPA, as of February 2nd, 2011, has begun the process of regulating perchlorate as a drinking water contaminant.

The State has held one public meeting regarding the perchlorate goal and is preparing a response to comments. Another public meeting may be held this summer.
The original development of a goal started in 2004 when the Office of Environmental Health Hazard Assessment (OEHHA) issued a public health advisory and subsequently adopted a Public Health Goal of 6 ppb. The Public Health Goal did not account for some key practical issues such as background levels, detection limits, or treatment feasibility. It only looked at the science relating to human health effects. A study had been conducted of 37 healthy volunteers subjected to three different doses of perchlorate and found that over the two week period there was no difference between the dosed and control subjects. Laboratory animals and humans react differently to short term dosing.

The State is required to perform a review of an adopted Public Health Goal every five years. In this review process, OEHHA found that a number of studies had been completed. These studies contained, among many things, evidence that animals and human newborns don't have the building blocks for thyroid hormone production and that animals are closer to human newborns in thyroid hormone function than human adults. This evidence helped determine the weight that the completed animal studies have when assessing the effects of perchlorate on the sensitive population of pregnant women, fetuses and newborns.

More recent studies evaluated by the Center for Disease Control (CDC) found dose/response results in the single digits (ie less than ten parts per million perchlorate). The review of data in 1998 included a survey of public water supplies and zip codes and perchlorate levels. Perchlorate levels were then compared of mothers by zip code and tests on babies indicating thyroid health. These studies suggested responses to perchlorate at levels lower than six parts per billion.

The current proposed Public Health Goal used the original study but used infants as the targets rather than adult pregnant women. Using infants as the sensitive receptor results in a much greater dosage of perchlorate per unit of body weight than when an adult is used. In looking at protecting sensitive receptor, OEHHA is proposing to lower the public health goal to one ppb. This proposed Public Health Goal does not look at the practical issues, such as, the ability to detect or treat a chemical.
Question – Larry Ladd: The ratios used for calculating adult and child risk changed from what it was thirteen years ago. When did that change? Answer: Three years ago.

The benchmark has not changed. The application and life stage has changed. The State of Massachusetts came to a conclusion that one ppb is harmful but pushed the regulated level to two ppb based on the levels for bleach used in disinfection of individual wells and the bleach contains perchlorate. They did not want to discourage disinfection

The final public health goal will be set later this year. The review of the protectiveness of the current Drinking Water Standard for perchlorate will then take place. Modificaitons to the Drinking Water Standard would then occur, if needed, after a one to two year process.

The Colorado River perchlorate levels above Hoover dam were at 6ppb in 2004. Back in 2002 perchlorate input into the Colorado River was 1000 pounds per day; now it is 100-200 pounds per day. Perchlorate does occur naturally and it is estimated that approximately half of the 100-200 pounds per day is from naturally occurring sources.

EPA is just beginning its regulatory process for perchlorate in drinking water.

Question: What drinking water benchmark or reference dose will EPA use? Will they look at the toxicology or just exposure? California kept the baseline toxicology and changed the exposure scenario. If they keep the same reference dose and use 1-6 month old infants then the EPA advisory would change from levels in the teens (ppb) to three (ppb). Answer: EPA has 18 months to recommend a number and then one year to regulate.

OEHHA is scheduled to come out with a recommendation for nitrate by the end of this year. The current Drinking Water Standard for nitrate is 45 ppm nitrate (as NO3). However, recent studies have shown an effect at 45 ppm. If one applies the smallest safety factor that is allowed of three, then the safe level would be around 15 ppm or 3 ppm (as N).

Comment – Larry Ladd: A study conducted thirteen years ago on T4 levels (thyroid storage hormone) in infants found significantly different results on the left and right side of the American river corresponding to the use of local well water or Folsom provided water. T4 levels are important for neural development.

4. OU-5 Record of Decision (ROD) – Kevin Mayer

The ROD was signed February 15, 2011. The EPA is working on an order to implement the ROD. The ROD sticks with current regulatory numbers. The problem is that the regulatory numbers will change. EPA insists on using drinking water standards where they exist For materials without maximum contaminant levels (MCLs) they are using other values such as public health goals. This leads to varying cleanup levels applied at Superfund sites in different states (public health or state goals).

The groundwater portion of the ROD was changed from a final ROD to an interim ROD because all source areas are not yet covered by a ROD . Interim ARARs will need to be reworked and in the end will be regulatory based and not risk based. The final ARARs are frozen, interim ARARs may change.

Questions – Janis Heple: Was it worth it to do the OU5 ROD without the source areas included? Answer Yes. We will get the data from the five year review of the effectiveness of the source (control?).

Are you (EPA) working with water purveyors to collect the appropriate data? Answer: The water purveyors are providing a remarkable level of cooperation between all parties.

Water replacement provision will kick in before reaching MCLs in order to allow time to implement actions to ensure water exceeding MCLs is not delivered. Some contaminants such as trihalomethanes and chloroform are based on disinfection scenarios but leave no room for water purveyors to adjust/treat with the resulting regulated levels set at the levels obtained by disinfecting the water.

EPA will publish a notice in the newspaper when OU5 order is complete and a community fact sheet for OU5 is issued.

5. General Aerojet Cleanup Overview: Alex MacDonald. RWQCB

(Handout provided by Alex MacDonald)

A **GET L-A.** NO CHANGE - Construction has been completed at the system is up and operating at approximately 900 gpm.

B **GET KA**: NO CHANGES. Operating with all initially planned wells operating, including former **AC-7** (Georgetown). Flow is approximately 1700 gpm and could be increased up to 1900 gpm. **AC-12** has once again been turned off due to NDMA concentrations near 5 ppt. Aerojet is looking at having an “open house” for the public at **GET K-A** sometime in the future.

C **AC-6** - The treatment system to remove perchlorate has been completed and is now in operation. California Department of Public Health will require some testing of the

system prior to use within the Golden State system. Discharge of water not into the distribution system is under Aerojet's NPDES permit.

D **AC-18** and **AC-23** (NO CHANGES) have been provided with perchlorate IX units with and startup of the treatment systems will commence when perchlorate concentrations become greater. AC-18 has undergone verification testing and the resin transferred to AC-23 for its demonstration to CDPH. Currently the wells contain around 1-3 ppb perchlorate.

E **GET H-A**: NO CHANGES. Working on getting two new extraction wells (White Rock Park and Coloma Road area) on north side of US 50 back to GET H. The pipeline under US50 is completed and Aerojet is working with SMUD to provide power to the two wells. The wells will likely be started up in two to three months. Delays are due to ability to supply the wells with power by SMUD.

F **GET B** – **GET B** has been expanded to accept transfer of **GET A** facility to the **GET B** location and to accept water from new extraction wells located in southern Zone 3 near **Teichert**. Two extraction wells north, east and south of **Teichert** are now hooked up to GET B.

G White Rock Road North Dump – The treatment systems is up and operating to treat two extraction wells and the AKT-1 well. Water is currently sent back to GET B for disposal. When needed by **Teichert** for their use the water will be provided to them. Waste Discharge Requirements for system will be considered at the April 2011 meeting of the Regional Board

H **New Monitor Wells**: Aerojet is planning several new monitor and/or extraction wells:

1. New monitor well northwest of the GET L-B facility to help define the NDMA plume and evaluate capture.
2. Monitor well between AC6 and AC12 to help define NDMA plume and provide information for placement of an additional extraction well to make sure NDMA does not get to AC6.
3. Monitor well southeast of AC22A/B to help define plume upgradient of those wells.
4. Monitor well in the GET E/F area to assess capture of the on-site extraction system and help locate a potential additional extraction well..
5. Extraction well in the area of Chem Plant 2 to intercept deeper flow from sources upgradient that are not captured by shallower extraction wells there.

I **Chettenham Well**: NO CHANGES. The Chettenham well remains off and the concentrations of perchlorate have remained around 3-4 ppb. Aerojet has reached an agreement with Cal-American Water Company concerning the Chettenham Well. The treatment system has been removed.

J NO CHANGES. Aerojet and Sacramento County are continuing negotiations on water replacement issues. Meetings are occurring one to two times per week. City of Folsom, The Boeing Company and Golden State Water Company also participate in some or all of the meetings.

K Perimeter Operable Unit – NO CHANGES - Aerojet is looking at removal of soils at site **C41** within the PGOU. Soils are impacted by perchlorate to the groundwater (approximately 80 feet) and perchlorate is in the groundwater. The area is within the proposed development area. To facilitate development, Aerojet would like to have the issue addressed sooner rather than waiting for ROD and subsequent order/implementation. Soils would be removed in the upper 10 feet to levels that allow unrestricted use.

L Boundary OU – Aerojet is continuing to evaluate recent comments on the RI submitted by Agency staff on human health and ecological risk aspects. The Feasibility Study is waiting for all of the comments to come in on the RI so as all the sites that need to be addressed in the FS are included.

M Treatability Studies:

i) **Line 03**. Redox box delivered along with walnut shells and sulfur to look at perchlorate reduction. Has been operating for one month at 3-7 gpm and results are promising.

ii) **HOGOUT** – NO CHANGES – Treatability study on-going to look at in-situ treatment of soils and groundwater has been completed. Aerojet is now looking at constructing and evaluating its "box of rocks" system.

iii) **Bioremediation of NDMA** – will be performing in-situ evaluation of biodegradation of NDMA in Zone 4 (GET A area). A SERDP/ESTCP project.

N Island OU -NO CHANGES. Assessing RI data for the RI/FS. IOU groundwater modeling work plan being developed.

O Eastern Operable Unit – NO CHANGES - all initial and follow-up sampling completed last week. Aerojet and their consultants will now commence development of the report.

P Central Operable Unit – NO CHANGES. Draft sampling plan has arrived, agency review has been completed and comments have been sent to Aerojet.

Q IRCTS:

i) **Sigma Complex In-situ Bioremediation of Groundwater**. NO CHANGES - System has been operational for two years. Boeing is adding an electron

donor to remediate high concentrations on perchlorate in groundwater at the Sigma Complex. Boeing is recirculating groundwater and adding an electron donor (acetic acid) to stimulate biological growth and reduction of perchlorate. Initially the system will include one extraction and one recharge well, and several monitor wells. System is working very well. Boeing has requested amending permit to allow discharge of a small portion of the water (after treatment to remove perchlorate and VOCs) to the perchlorate source area to help flush the perchlorate to the biological treatment system. Amended requirements to allow this to occur will be considered by the Board in December.

ii) **White Rock Road Dumps 1 and 2**. NO CHANGES. These two old burn dumps will be combined at the Dump 2 location on the IRCTS. That area is slated to be a park in the Rio Del Oro development. Looking at doing the work the end of this summer.

iii) (NO CHANGES) The first modular biotreatment cell at **GET F Sprayfield and PBA** to remove perchlorate from extracted groundwater has been constructed and filled with media. The liner was found to leak. Thus, the cell was emptied and the liner repaired. The cell will be tested and then commence operation where the treated water is sent back to the ground for recharge.

6. Aerojet Community Updates, Cindy Caulk, Aerojet

Aerojet was recognized by Sacramento Municipal Utility District (SMUD) for the company's installation of a more energy-efficient ultraviolet (UV) treatment system. Existing equipment was projected to consume 270kW of power to treat the design flow to discharge standards. Installation of the new system resulted in the drop from 270 kilowatts per hour to 120 kilowatts per hour. The amount of energy saved at the facility in just two days equals the amount of energy used by the average California household in one year. Aerojet estimates that the system will result in an approximate annual savings of $120,000 in energy costs.

7. The next CAG meeting is scheduled for May 18, 2011.