Meanwhile, Back at the Ranch

Newsletter of the Frontier Fertilizer Superfund Oversight Group

Fall 2007 ***Volume 9 issue 1***

EPA Is Moving Toward Final Remedy

In our last newsletter (June 2006), we expressed concern that the United States Environmental Protection Agency (EPA) was rushing site clean-up without sufficient scientific underpinnings. Soon afterwards at the last public meeting, the EPA presented the Proposed Plan (PP) to address the groundwater and soil contamination at the Frontier Fertilizer site in east Davis and asked for public comment. The Plan includes: Continued groundwater pumping and removal of contaminants; thermal treatment of soil and groundwater to remove contaminants; application of beer fermentation process waste for biological degradation of contaminants, particularly nitrates; continued groundwater monitoring.

The FFSOG submitted comments on the proposed plan both prior to, during and after the public meeting and has met several times with EPA and other stakeholders in an attempt to address our concerns. Our primary concerns are related to the proposed bioremediation using injected beer fermentation waste and air quality issues related to thermal treatment.

On the first issue, after considerable research, the FFSOG believes there is no evidence anywhere that biodegradation of the site contaminants will work, and that this treatment option should be further studied before implementation. EPA has since conducted a pilot study for bioremediation at the site and has agreed to put this on hold for now. On the second issue, EPA has agreed to do further studies to look at possible dangerous daughter products of thermal degradation and to determine how to ensure that toxic gases do not escape to the neighborhood.

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Other concerns include the lack of performance criteria for clean-up. The FFSOG has asked EPA to establish these criteria and EPA has agreed to look at this issue. The FFSOG also wants assurances that the pump and treat system will be upgraded to fully contain the plume, which is not the case currently. The EPA has agreed to this and to consider improvements in the groundwater flow model to guide upgrades to the pump and treat system.

In September of 2006, EPA released the Record of Decision (ROD) based on the PP and comments on the PP submitted by FFSOG, state agencies and the public. While many of the FFSOG's concerns were addressed in the ROD, some serious concerns were not. EPA assured the FFSOG that they are committed to addressing all the issues either in the design phase or during implementation of the final action. EPA is committed to full containment of contaminants and clean-up to MCLs.

Thermal Treatment

The cornerstone of the proposed remedy is thermal treatment, which will consist of underground heating at high temperatures using electrical energy to remove contaminants that are a continuing source to groundwater contamination. The intense heat either degrades and destroys the chemicals of concern or vaporizes them for capture and subsequent treatment above ground. Although not originally stated in the Feasibility Study, vapor controls, including air monitoring, an impermeable layer of plastic over the source area, and soil vapor collection and treatment, will be integral to the thermal treatment process. It is predicted to take about a year for the heat treatment to be completed. The pump and treat system will continue for a significant period (probably several decades) after the heating is completed to treat the remaining groundwater to drinking water standards.

During subsequent meetings with EPA, the FFSOG and interested community members, several issues came out that are of concern to the FFSOG and neighbors of the site. These include: 1. What are safeguards to ensure full vapor containment? 2. What if there is a leak during heat treatment? 3. What if there is a power failure? 4. What air monitoring will occur? 5. What are the primary airborne constituents of concern (in addition to the Chemicals of Concern), and how do they behave? These issues were addressed at a technical meeting in February 2007.

To ensure full vapor containment, the plan is to maximize underground thermal destruction using appropriate temperatures. Toxics that escape underground destruction will be trapped under a plastic cap for extraction and subsequent treatment. If a leak occurred, the heating system would immediately shut off

while the vacuum system continued to extract vapors until the heat ramped down. Project personnel would also be immediately notified. In case of power failure in the primary source, auxiliary sources would run the system until the primary power could be restored or the system shut down. Air monitoring would consist of continuous ambient air monitoring along with other forms. Further details will be worked out when a heating vendor is brought on board in the next month or so.

The FFSOG expressed concerns about release and behavior of daughter products of hydrocarbons found during sampling in treatability studies, EPA is currently looking into this.

EPA is currently working on a bid package for the thermal treatment to get out to vendors in order to proceed with a plan and design for the thermal treatment. The final plan for heat treatment will be shared with the public for input prior to implementation.

Bioremediation Study

In response to comments from the FFSOG, EPA conducted a Phase I Anaerobic Bioremediation Field Study to examine effects of bioremediation on the chemicals of concern, nitrates, and sulfates. Beer fermentation process waste plus a tracer (potassium iodide) was injected into a monitoring well under gravity flow. It was expected that most, if not all, of the injectant would be captured by a down-gradient well 12 feet away. Groundwater characteristics were monitored in the wells for 121 days following the injection to evaluate the effects of the injectant. Some of the objectives of this study were to confirm that anaerobic conditions can be established and maintained by addition of the fermentation waste to the subsurface; estimate the extent of the anaerobic treatment zone and conditions necessary to maintain the treatment zone; and to evaluate the effectiveness and rates of electron donor utilization, establishment of reducing conditions, and reduction of target contaminants.

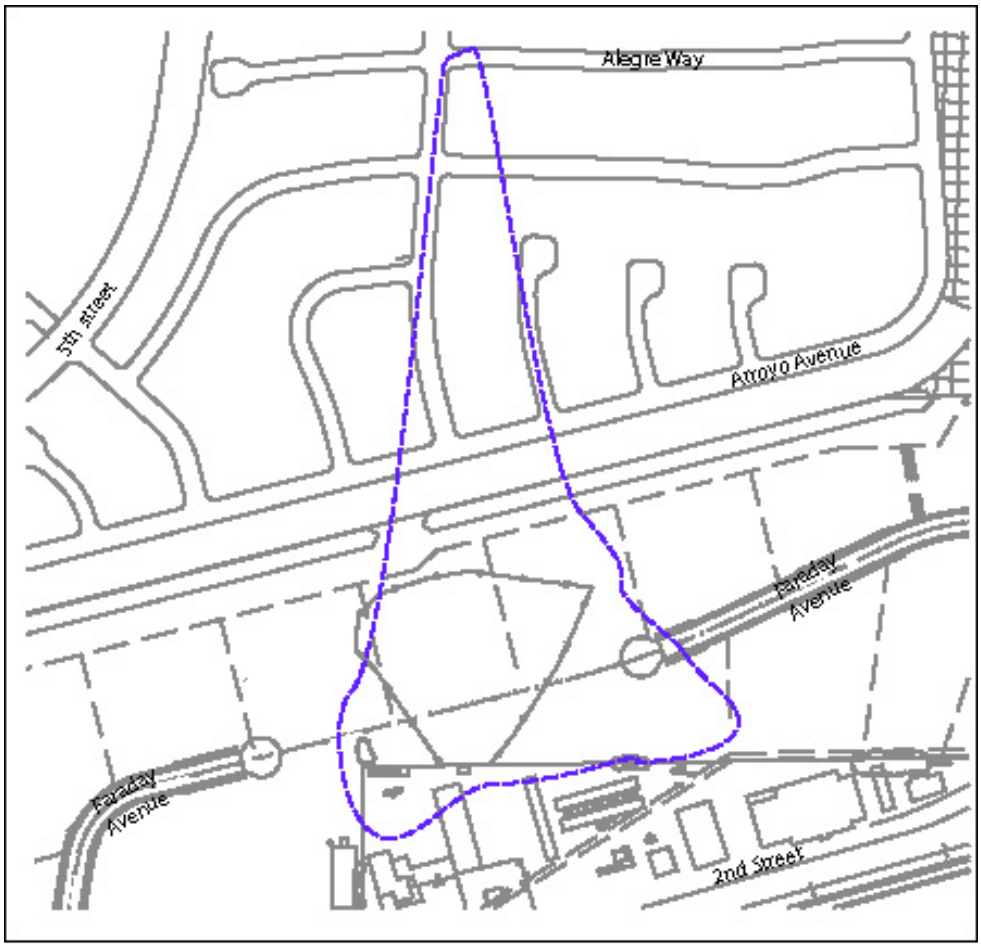
The results of the study did not satisfy the original objectives. While the results show inducement of reducing conditions in an unknown volume adjacent to the injection well, the extent of these conditions could not be determined from the study. There was no evidence for nitrate or sulfate reduction beyond the injection well. There was no conclusive evidence for reduction of the target VOCs in the injection well or beyond. The results did not satisfy the primary objective which was to evaluate the use of injection wells for larger scale test injections. In general, the results are largely inconclusive and do not indicate this method will have any effect on the target compounds. Another consideration is that thermal treatment will probably change the hydrology and microbial community, so testing prior to the heat treatment cannot predict what will happen afterwards. Moreover, the biological treatment is not needed to treat the VOCs; the thermal treatment is the proven method for this. No studies have shown conclusive evidence for microbial reduction of these compounds.

Target Update.

The footprint for the Target development approved in an election last year would impact locations of some of the existing wells and ancillary components in the field where the development is proposed. It is anticipated that these will have to be modified or replaced with new wells and that this work will be done by Target Corporation's consultants with close oversight by EPA and DTSC. The wells located in the proposed development area are part of an extraction and monitoring network critical to site restoration and clean-up. Modifications to these wells must be carefully planned in order to minimize disruption to clean-up work at the site. In addition, ready access to the wells in the future for maintenance and monitoring and for collection of quarterly water samples from monitoring wells for analysis must be maintained. The wells and utilities are not constructed to withstand loads related to vehicle or equipment traffic, so they must be permanently protected from such traffic.

The FFSOG has some serious concerns about the Target development taking away from the priority tasks of site clean up and investigation. Target proposes to replace the monitoring wells that are currently in the store's footprint. EPA and the FFSOG have recently worked positively together to develop a Scope of Work (SOW) for Target's contractor to ensure that the proposed well replacement will not detract substantially from EPA's focus on the remediation process and that the replacement wells will provide essential hydrologic and water-quality information of the same or better quality as the abandoned wells. The SOW provides a plan to modify existing infrastructure and to select suitable alternative well locations to replace wells proposed for abandonment as part of Target's development.

The FFSOG is committed to ensuring that pressures to move ahead with construction of the Target development do not in any way hinder EPA's work in the clean-up process or compromise future clean-up work at the Frontier Fertilizer Superfund Site.



Map showing the maximum extent of contamination as of fall 2006. The dashed outline is based on concentrations in wells in the S-2 water-bearing zone that are above the maximum contaminant level for the four primary contaminants of concern; carbon tetrachloride, dichloropropane, dichlorobromopropane (DBCP) and ethylene dibromide (EDB).

Calling for Volunteers!

FFSOG's Board of Directors is a volunteer group working to keep the community informed of and involved with the clean-up process at the Frontier Fertilizer Superfund Site. We could use your help. Would you be interested in serving on our Board of Directors? If you are interested or you would like more information about us, contact us at pnieberg@dcn.davis.ca.us or 530-756-6856.

Frontier Fertilizer Superfund Oversight Group

Please help us in our efforts. Make your tax-deductible contribution payable to FFSOG.

___Add me to your mailing list.
___I would like to make a donation in the amount of:___$10 __$25___$100___Other.
___I cannot make a donation at this time, but would like future information.

Name_____Address_____
Phone_____email_____

Please contact the FFSOG at 3010 Loyola Drive, Davis, CA 95618, (530) 756-6856 or pnieberg@dcn.davis.ca.us. Please include your name and contact information.

Check out our website at www.dcn.davis.ca.us/go/ffsog.

Thank you for supporting FFSOG.

The FFSOG is a non-profit, public benefit corporation formed in the State of California. The FFSOG is formed as a community oversight group dedicated to keeping the larger community informed of progress in EPA's clean-up activities at the Frontier Fertilizer Superfund Site and to facilitating meaningful public input into the process.

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