

H. 532 Study Support

Monthly Progress Report Period Covering July 1, 2007 to July 31, 2007

Prepared for:

CLF Ventures

Compiled by:

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Background:

The Section 5 RFP describes two Phases for the Section 5 Study. Phase I of the Section 5 Study was completed in January 2007, culminating in a detailed Phase I project report. Phase I focused on the assessment of existing data and studies, and led to the identification of new data to be collected in Phase II. The current stage of the Section 5 Study involves the continued delineation and implementation of Phase II data collection.

Progress of Phase II Tasks:

Phase II data collection and assessment was initiated in May 2007. Major activities of the hydrogeological investigation in July 2007 included sampling of existing and new groundwater wells on the Omya property and an initial survey of conditions in Smith Pond. Air-related activities included steady progress on the Hazardous Air Pollutant Modeling Study and the start of sampling in the Dust Monitoring Study.

Phase II hydrogeological sampling results have begun to arrive, and while only a small fraction of the results are available, there are some noteworthy findings:

- Flotation reagent compounds were detected in Well 2 only, which is located a short distance downgradient of the tailings management areas. Flotation reagent chemicals have previously been detected from this well in Omya's Fall 2006 and Spring 2007 sampling rounds. The flotation agent-related chemicals were detected at concentrations lower than the state-approved groundwater standard, and were collected from "discrete zone" samples isolated to collect water migrating in bedrock fracture zones.
- Arsenic was detected at a concentration of 17 µg/L in a similar "discrete zone" groundwater sample from a well close to the tailings management areas. This result is reported as an estimated value by the laboratory, and may be an overestimate. Reanalysis is ongoing.
- Perchlorate was detected in surface water north of the Hogback quarry. This water is representative of water pumped and discharged from the Hogback Quarry. This result suggests that perchlorate may have been introduced to groundwater from blasting explosives. Further sampling is being conducted in August to investigate the perchlorate source and its potential migration in groundwater to nearby drinking water sources.

Additional details of these preliminary results follow in the Phase II progress highlights section, along with some information on the start-up of the Dust Monitoring Study and other aspects of the Phase II portion of the Section 5 Study.



Phase II progress highlights:

- Hydrogeology and Surface Water (principal contributor: David Adilman)
 - Groundwater sampling was completed at 17 on-site existing and new bedrock monitoring wells and at the Omya gravel wells. Two zones were sampled from Well J (this well was targeted for discrete zone sampling using packers but could not be completed due to borehole instability). Wells B and 2 were sampled from discrete zones in June, and were re-sampled in July for Flotation Reagent analysis only. Samples were submitted for analytes listed in the Field Sampling Plan (FSP). The results of this sampling effort will be used to evaluate the validity of historic sampling results, better define patterns of contaminant concentrations in groundwater, and play an important part in determining the extent (if any) to which contaminants are or could be entering and migrating in groundwater. Evidence from recent sampling supports historical findings for two contaminants, acrylamide monomer and monomethyl amine. Our July groundwater sampling event did not include acrylamide monomer and monomethyl amine due to a history of non-detects in all wells (including the most recent May 2007 sampling round by Omya and our own discrete zone sampling in June 2007). Combined with Phase I that indicates these compounds are readily degraded in the environment, we feel confident that acrylamide monomer and monomethyl amine can be eliminated as contaminants of concern.
 - Preliminary results of the June 2007 discrete zone packer testing are available from wells K, L, B and 2 (located very close to the tailings management areas). These data have not yet been validated. Our draft data suggest the following:
 - Arsenic was detected at concentrations ranging from 0.63 to an estimated 17 µg/L (micrograms arsenic per liter of water, also sometimes expressed as parts per billion, or ppb). Only the estimated result from Well B from 46-56 feet below ground surface exceeded 10 µg/L (the federal drinking water standard and Vermont Groundwater Enforcement Standard). The reported result of 17 ppb was qualified by the laboratory with an “E” indicating the result is estimated due to interference by other chemicals (such as argon chloride, which can be formed from chloride in the sample and argon from the mass spectrometer). Evaluation of the laboratory Quality Assurance/Quality Control (QA/QC) data reveals that these arsenic detects may be biased high due to this interference effect. Additional arsenic analyses (Method 7062/6020 Hydride Generation/ICP-MS) will be conducted on replicates of these samples to more reliably quantify the concentrations.
 - Flotation reagent compounds were detected in Well 2 only. The LC/MS/MS analytical method provides results for four chemicals in or related to the flotation reagent: Tall Oil Amido Amine (TAA), Imidazoline (IM, also known as TOHI), Aminoethyl-ethanolamine (AEEA) and Duomeen-T (DT). TOHI was reported at 19.97 µg/L from a sampling depth of 61.5-81.5 ft and 52.16 µg/L was reported from 105-113 ft. AEEA was reported at 40.63 µg/L from 105-113 ft. These results are

within the state-approved Health Advisory for the combined flotation reagent compounds of no more than 126 µg/L.

- Stearic acid, used by Omya as a product coating, was detected in 8 of 10 samples at concentrations ranging from 3.4 - 11 µg/L.
 - Acetone concentrations ranged from non-detect to 15 µg/L. The Vermont Groundwater Enforcement Standard (VGES) is 700 µg/L.
 - Petroleum hydrocarbons were detected at a low level in Well K at 49-64 ft. The reported value was 48 µg/L of the C₁₉-C₃₆ Aliphatics (a generic class of hydrocarbon molecules containing from 19 to 36 carbon atoms). As a reference, the Massachusetts drinking water standard for C₁₉-C₃₆ Aliphatics is 5,000 µg/L (there is no VGES).
- Several teleconference calls were held between Severn Trent Laboratories (STL, now TestAmerica), Geosyntec, Cambridge Environmental, and Omya regarding flotation reagent analysis by LC/MS/MS. Discussions have focused on a recently completed “holding time” study as well as procedures for a follow-up study (a holding time is the maximum period of time recommended for storing a sample before it is analyzed by the laboratory. In this case, however, recovery data suggest that groundwater or surface water samples acidified immediately upon collection do not degrade with time when kept on ice, so that the length of “holding time” seems to be far less important, for quantifiable recoveries of analytes, than preservation by acidification).
 - Phthalates were detected in a number of samples but, after review of the laboratory data package, are believed to be artifacts associated with the plastic tubing used during sample collection.
 - The survey of Smith Pond and tributaries was conducted on July 5, 2007. Initial data are insufficient to reach conclusions about potential impacts to the Pond, and so additional limited field work is planned. This work will include additional surface water sampling, fish collection, and stream assessment.
 - In the course of surface water monitoring conducted on July 5th, perchlorate was identified in a surface water sample at the Hogback Quarry at a concentration of 77 µg/L (micrograms perchlorate per liter of water, also sometimes expressed as parts per billion, or ppb). The presence of perchlorate in surface water discharges from quarries where blasting has occurred is relatively common, since it is (or was) present in various explosives used for blasting. Although most of the perchlorate contained in explosives is destroyed upon detonation, a small amount typically remains. Because perchlorate salts are highly soluble, leaching of perchlorate to groundwater is often observed. Fireworks also typically contain perchlorate, and several recent studies in Massachusetts and elsewhere have identified perchlorate in soils and groundwater near the locations of fireworks displays. Many blasting companies, including those employed at Omya, have endeavored in recent years to eliminate the use of perchlorate-containing explosives.

Our Phase II Work Plan provided for the collection of an initial sample to test for the presence of perchlorate. This sample was collected at a point north of the

Hogback Quarry at which quarry water (combined stormwater and pumped groundwater) is discharged from a detention pond into a surface water stream that later joins Otter Creek. Based on the finding of 77 ppb, we are planning to collect additional data on perchlorate to examine its source and extent of migration. Our initial plans for additional data collection include further sampling of (1) water pumped from the Hogback Quarry, to further investigate the source, and (2) nearby residential drinking water sources, to check for potential migration of perchlorate. Although there are no federal or Vermont drinking water standards for perchlorate, the U.S. EPA has established a Drinking Water Health Advisory Level of 24.5 ppb.

Based on this preliminary result, we will conduct additional water sampling for perchlorate. In particular, we will:

- Re-sample the northern outfall;
- Conduct initial (and recommend periodic) sampling of the groundwater extracted from the quarry, which will be coordinated with Omya to determine the nature (magnitude and persistence) of perchlorate concentrations in groundwater beneath the quarry; and
- Seek to test residential wells near the quarry for perchlorate.

We hope to provide additional perchlorate results in the August progress report, pending our ability to conduct additional sampling and obtain sample results.

- Air (principal contributors: Britt Holmén and Michael Ames)
 - The Dust Monitoring Study is now underway according to schedule.
 - Laboratory testing and calibration of the Dust Study sampling and monitoring equipment was conducted in early July, and the instruments were installed at 10 sites (9 dust monitoring sites and 1 meteorological station site) around Omya on July 10, 2007. Initial field tests were conducted July 11-15, 2007 to verify proper instrument operation after installation.
 - Sampling and monitoring for Total Suspended Particulate (TSP) began on July 17, 2007. Filter samples were collected for the following dates in accordance with the EPA 3-day sampling calendar: July 17, 20, 23, 26 and 29.
 - Some study start-up problems have been encountered, and most have been resolved quickly. These difficulties are normal in any air monitoring study, and will likely result in some loss or decrease in quality of a limited amount of data. These difficulties are not expected to compromise our ability to evaluate dust impacts, however, since study plans include the collection of fairly large number of samples and multiple types of data.
 - Some of the early sample filters were wet due to rain, leading to longer post-conditioning times and repeated post-weighing of samples.

- Some of the sample filters collected insects (this is not unusual). Preliminary data will report the number of visible insects and sample weight including the insects. The Site 8 monitors were re-located farther from the edge of a field due to extremely high numbers of insects.
- Operational problems with the field instruments occurred at the following sites/ dates and corrective action was taken as follows:
 - The datalogger on the Automet meteorological data station was found not to be operating on 7/16/07 – the datalogger was replaced on 7/18/07.
 - The PQ-200 particulate monitor at the Post Office Location malfunctioned on 7/18/07 – it was replaced by a similar PQ-100 model on 7/21/07.
 - The E-Sampler at the background Markowski residence site ceased to function on 7/30/07 – the sampling team is waiting for a replacement E-Sampler, which hopefully will arrive from the manufacturer on 8/6/07.
 - The UVM team met with Steve Zemba on July 19th to discuss data presentation formats. UVM will prepare ArcMAP plots of Total Suspended Particulate (TSP) concentrations for data dissemination in graphical format.
 - The Hazardous Air Pollutant (HAP) Modeling Study continues to progress. The HAP study is being conducted to determine whether emissions from Omya’s facility-wide process operations present significant risks to human health.
 - All of the necessary data for modeling HAP emissions from the entire Omya site have been obtained, reviewed, and incorporated into models to predict Omya’s contributions to atmospheric HAP levels in the area around the facilities.
 - Modeling of annual average HAP emissions is complete, and models for short-term (*i.e.*, one-hour and 24-hour) HAPs emissions have been written and tested. Maximum short-term emission rates for the entire facility have been calculated and are being screened against toxicologically-based criteria to determine which compounds will be assessed in detail with regard to public health impacts from acute exposures.
- Noise (principal contributor: Lawrence Copley)

No significant work on noise was conducted by the Section 5 Study Team in July. However, we understand that Omya has been collecting acoustical data on their plant equipment during July (as described in the June Progress Report). These data should allow Omya to determine which sources are most responsible for noise it causes at neighborhood locations. We anticipate imminent receipt of those data in preparation for the next noise review meeting (scheduled for August 7th).

Anticipated Work:

The following activities are anticipated in August 2007. Details of some of these activities are provided in the Phase II Workplans.

- Hydrogeology and Surface Water
 - Evaluation and analysis of groundwater testing results
 - Surface water and residential well sampling
 - Follow up sampling and analysis for perchlorate
 - Non-TMA potential source assessment
 - Additional Smith Pond and tributary evaluation
- Air
 - Initial measurements from the Dust Study will be examined by the study team; possible changes in the locations of continuous monitors will be considered. Collection of bulk and surface materials for elemental analysis will begin.
 - The toxicological assessment of annual average ambient HAPs impacts will be developed. After the toxicological screening assessment of the facility's short-term HAPs emissions, dispersion models for these emissions will be run, and potential short-term health impacts will be assessed.
- Noise
 - Initial data collected by Omya with their new acoustical monitoring equipment will be reviewed.
 - A follow-up meeting on noise remains scheduled for August 7, 2007, involving Copley Associates (representing the Section 5 Study Team), Omya, HMMH (Omya's noise consultant), and members of the Rosato family (local residents concerned about noise from Omya).. The meeting will be designed to discuss progress made by Omya since the June 21, 2007 meeting.