

Settlement Agreement and Consent Order
3M and MPCA, May 22, 2007

QUARTERLY PROGRESS REPORT #5

April 1 – June 30, 2008

On May 22, 2007, 3M and the Minnesota Pollution Control Agency (MPCA) entered into a Settlement Agreement and Consent Order (Settlement Agreement) for the investigation and assessment of fluorochemicals (FCs) at sites in Washington County and for the execution of certain other related matters. This report is provided to fulfill the requirement outlined in Part XIII.A of the Settlement Agreement.

REPORTING PERIOD: April 1 to June 30, 2008

ACTIVITIES COMPLETED:

Remedial Investigations (Part VI) and Feasibility Studies (Part VII)

Given the interrelatedness of the remedial investigation (RI) work and the feasibility studies (FS), these sections have been combined with the intent of providing a simpler, more straightforward update.

Cottage Grove

In a letter dated April 2, 2008, the MPCA approved several pre-design field activities that had been discussed with agency staff in a meeting on March 13, 2008 and further described in a letter from Robert Paschke to Douglas Wetzstein dated March 19, 2008. Details of these activities were formalized in the *Pre-Design Field Activities Work Plan* that was prepared by Weston and submitted by 3M to the agency in May 2008.

In a letter dated April 30, 2008, the MPCA provided a response to 3M concerning the FS Report that had been submitted on March 13, 2008. Specific comments included the following:

- Concurrence on the recommended Sitewide Alternative SW-2 with specific requirements for the implementation of the institutional controls.
- Concurrence relative to enhancing the groundwater recovery system with technical comments regarding the proposed system in Groundwater Alternative GW-1.
- A recommendation that Soil and Sediment Alternative S/S-3 be implemented with technical comments regarding the East Cove area.

- A request that the technical comments outlined in its April 30, 2008 be addressed in a FS Report Modification.

On May 30, 2008, 3M submitted the requested *Feasibility Study Report Modification*. In concert with the *Pre-Design Field Activities Work Plan*, this report was intended to address comments from the MPCA's April 30, 2008 letter and to indicate how additional data collected during the pre-design field activities will be used to support the final design of the groundwater extraction system and to refine areas of excavation.

During this reporting period, the following field activities were completed at the site:

- Stratigraphic soil borings were drilled in the area of proposed extraction wells to provide lithology and other information to be used in the extraction well network design.
- Additional soil sampling was conducted in the D2 Area.
- Additional sediment sampling was conducted in the East Cove Area.
- Preliminary pre-acceptance soil sampling for non-PFC constituents for soils intended to be disposed of off-site was conducted.

The aforementioned soil and sediment samples were submitted for PFC analysis.

On April 16, 2008, 3M submitted an addendum to the FS Report for the site to address the disposal of excavated soil and related debris. This document was prepared at the MPCA's request to provide a description of off-site disposal facilities reviewed and considered, as well as a recommended facility. This report was written to be applicable to all three Sites (Oakdale, Woodbury and Cottage Grove) and was approved by the MPCA in a letter dated May 12, 2008.

On May 5 and June 9, 2008, meetings were held with MPCA staff concerning National Pollutant Discharge Elimination System (NPDES) permitting issues related to PFCs. More specifically, the timing of design activities pertaining to the extraction and treatment of groundwater were reviewed, as were possible permitting approaches.

Oakdale

As noted above, on April 16, 2008, 3M submitted an addendum to the FS Report for all three sites to address the disposal of excavated soil and related debris.

Also during this reporting period, installation of new groundwater extraction wells (as identified in the FS Report) in the south/south-central portion of the site was completed. Twelve (12), instead of the planned thirteen (13), extraction wells were installed based on the field lithological conditions encountered. These wells were developed and short-term pump tests conducted to

project influent loadings to the proposed new groundwater treatment system. A thirteenth well will be installed north of Highway 5 after completion of the soil removal activities.

In addition to completion of the new extraction wells, additional field activities during this reporting period included preliminary pre-acceptance soil sampling for non-PFC constituents for soils intended to be disposed of off-site.

In a letter dated May 12, 2008, 3M submitted a request to install pumps in the 12 new extraction wells and to construct conveyance piping from the new well network to the existing onsite sanitary sewer manhole. Furthermore, pending MPCA, Metropolitan Council Environmental Services (MCES) and City of Oakdale approvals, 3M proposed pumping the new extraction wells for an extended period of time (i.e., several months) in order to acquire design data for the proposed new groundwater treatment system.

3M and MCES personnel met on May 22, 2008 to review a variety of topics relating to PFCs, including specifics concerning discharge of Oakdale Site groundwater to the MCES system. In a letter dated June 4, 2008, the MPCA approved 3M's request for an extended pump-test, contingent upon MCES approval also being obtained. Following the May 22 meeting with MCES and receipt of MPCA's conditional approval, 3M supplied requested information to MCES personnel in a letter dated June 18, 2008. A modification to the existing industrial discharge permit for the Site is anticipated shortly.

In meetings with MPCA staff on June 10 and June 25, 2008, 3M discussed the management of soils that could potentially be a source of odors during excavation in the area north of Highway 5. As part of this dialogue, 3M proposed installing a temporary soil vapor extraction (SVE) system in the portion of the excavation area that contains higher concentrations of VOCs. Given that SVE is a proven technology for removing VOCs from vadose zone soils, its utilization would reduce the potential for VOC odors from the Site. Based on agreement reached in the meetings, 3M began preparation of a written request for approval to install a temporary SVE system as an Interim Response Action, as outlined in Exhibit C, Section IV.B of the Settlement Agreement (subsequently submitted on July 2, 2008).

Woodbury

As previously described, on April 16, 2008, 3M submitted an addendum to the FS Report for all three sites to address the disposal of excavated soil and related debris.

Additional soil characterization involving analysis of archived soil samples collected in March 2008 was completed. Results from these analyses were presented and summarized in a report entitled *Main Disposal Area Additional Geoprobe[®] Sampling Program, Woodbury Site, Woodbury, Minnesota*, submitted by 3M to the MPCA on May 22, 2008.

During this reporting period, the following activities were also addressed:

- Analytical results for the 4th round of groundwater sampling (samples collected in March 2008) were finalized in June 2008.
- An additional hydraulic evaluation of the existing barrier well network at the site was performed during the Memorial Day weekend maintenance shutdown of the barrier wells.
- Soil samples from the Main Disposal Area were re-analyzed for PFBA with an objective of lowering the Limit of Quantitation (LOQ) from 0.1 to 0.001 ppm.
- Preliminary pre-acceptance soil sampling for non-PFC constituents for soils intended to be disposed of off-site was conducted.

A meeting was held with MPCA staff on June 25, 2008 to review the additional soil characterization data and the results from the additional hydraulic evaluation of the barrier well system. Based on this discussion, it was determined that an additional addendum (Addendum 2) to the FS should be prepared and submitted for agency review. The report would provide a summary of the additional hydraulic evaluation that was performed in May 2008 and present a refined Soil Alternative S-3 based on the October 2007 RI results and the results of the March 2008 soil sampling program. (It should be noted that this document, *Addendum 2 to the Feasibility Study for the Woodbury Site, Woodbury, Minnesota*, was submitted by 3M to the MPCA on July 14, 2008.)

In a letter dated January 9, 2008, the MPCA requested 3M to install four pair of monitoring wells in southern Washington County. The stated intent of this request was to better understand the presence of PFCs in certain areas of Cottage Grove and Woodbury. The three pair of wells to be located in Cottage Grove have been installed. Complications related to specific well location and access agreements have delayed installation of the pair of wells in Woodbury.

All Sites – SKB Landfill

3M has participated in numerous meetings with MPCA and SKB personnel concerning repermitting of the SKB Rosemount Landfill to include a waste containment cell for nonhazardous PFC-containing soils and related debris from the three 3M Sites. In addition, 3M participated in sharing information at an open public forum in Rosemount on June 5, 2008. This meeting was hosted by SKB and was a voluntary initiative of the company to present information on the waste containment cell and to answer citizen's questions. Furthermore, in a letter dated June 20, 2008, 3M responded to several questions raised by the MPCA permit engineer assigned to the SKB facility.

Response Action (Part VIII)

In a letter dated January 30, 2008, the MPCA requested 3M to begin discussions with Washington County regarding providing an alternative water supply for a well located within the Lake Elmo Park Reserve and to investigate ground water impacts in the area south of Eagle Point Lake in Lake Elmo, MN. 3M indicated its willingness to address both of these items in a letter dated February 18, 2008.

3M has met with Washington County personnel concerning possible options to address the Lake Elmo Park Reserve primitive campground well. The County understands 3M's willingness to help address this situation and is currently considering various approaches.

The location and construction details concerning the well to be installed south of Eagle Point Lake have been finalized with MPCA staff. Once access agreements are obtained from Washington County, installation of the well will commence.

Information-Sharing Process (Part XIII.B)

In the October-December 2007 quarterly report, 3M indicated its belief that the obligations under this part of the Settlement Agreement had been satisfied. This matter was discussed in a meeting during the first quarter of 2008. At the request of the agency, additional information summarizing this item was submitted on April 14, 2008 for consideration. 3M awaits MPCA review and determination concerning this matter.

A 3M-sponsored seminar was conducted at MPCA offices on April 18, 2008 by Dr. Scott Mabury from the University of Toronto. The title of his presentation was "PFAs in the Environment: Sources, Mechanisms, and Trends".

Health and Toxicological Studies (Part XIII.C)

3M continued to cooperate with the Minnesota Department of Health (MDH) in providing health and toxicological information relative to PFCs. The process established in May-June of 2007 to share specific updates on various studies as they are underway has continued with 3M providing monthly written summaries to the MDH. For informational purposes, copies of these updates are also provided to the MPCA.

Recovery of Expenses (Part XXIII)

In a letter dated February 11, 2008, the MPCA requested reimbursement for expenses related to PFC activities. Payment for the amount related to oversight costs related to the three sites under the Settlement Agreement was submitted on April 14, 2008. Payment for the amount related to the point-of-use water filter study was submitted on April 30, 2008.

In Part XXIII.D of the Settlement Agreement, 3M agreed to provide to MPCA a grant in an amount up to five million dollars for expenses incurred for the purpose of investigating and assessing the presence and effects in the environment of any PFC. This section of the Agreement also indicated that MPCA would consult with 3M on the scope of such work and would consider 3M's comment in the selection of appropriate research. Towards this end, a meeting of 3M and MPCA personnel was held on June 19, 2008 where MPCA staff presented results from research recently completed or underway. In the course of this discussion, planned or possible future work was also reviewed.

ACTIVITIES UNDERWAY &/OR PLANNED FOR JULY-SEPTEMBER 2008:

Scope of Agreement – Washington County Landfill (Part V.F)

Under terms outlined in Section V, Part F, of the Settlement Agreement, 3M agreed to grant the MPCA up to eight million dollars for implementing remedial actions at the Washington County Landfill (Landfill). The Agreement requires 3M to pay five million dollars of this grant to the MPCA within 30 days after receipt of written notice from the MPCA of the selection of the remedial actions the agency intends to implement at the Landfill. In a letter dated June 25, 2008, the MPCA informed 3M that the MPCA had selected the “Dig and Line” option as the remedy for PFCs at the Landfill and requested payment of the initial grant amount within thirty days of the letter. Payment in the amount of five million dollars was made to the MPCA on July 24, 2008.

Remedial Investigations (Part VI) and Feasibility Studies (Part VII)

Given the interrelatedness of the remedial investigation (RI) work and the feasibility studies (FS), these sections have been combined with the intent of providing a simpler, more straightforward update.

Cottage Grove

As outlined in the *Pre-Design Field Activities Work Plan and Feasibility Study Report Modification*, the following activities are anticipated:

- Installation of three piezometers in the East Cove Area to monitor water levels during a pump test of the extraction well to be installed on the west side of the cove.
- Installation, development and pump-testing of two new extraction wells. One well will be located near stratigraphic boring location S-1 and the other will be at the western side of the East Cove. A twenty-four (24) hour pump tests will be performed at each new extraction well to establish well yield and monitor water level changes in nearby wells and piezometers to determine the capture zone created by pumping. This information will be evaluated using the existing site groundwater model to confirm the spacing of future extraction wells.
- PFC analytical work for soil and sediment samples collected in the D2 and East Cove Area will be completed.

It is anticipated that discussions will continue relative to NPDES permit revisions necessary to allow the discharge of treated groundwater from the Woodbury and Cottage Grove Sites, as well as leachate from the SKB Landfill.

3M will continue remedial design activities, as appropriate, to be in a position to implement a remedy following MPCA final selection.

Oakdale

On July 23, 2008, 3M had a second meeting with MCES personnel to discuss management of extracted groundwater at the Site. Specifically, the information provided in 3M's letter dated June 18, 2008 was reviewed, including timing to conduct the proposed extended pump-test. Pending MCES and City of Oakdale approvals, pumps will be installed in the 12 new extraction wells and conveyance piping will be constructed to collect and discharge groundwater into the onsite sanitary sewer. Commencement of the extended pump-test is anticipated by mid-September.

In a letter dated July 2, 2008, 3M submitted a written request for approval to install a temporary SVE system as an Interim Response Action, as outlined in Exhibit C, Section IV.B of the Settlement Agreement. In a letter dated July 23, 2008, MPCA approved installation of this system with a request to provide detailed design information for review and approval. This information is being gathered and will be submitted shortly. Pending MPCA and City of Oakdale approvals, a temporary SVE system will be installed and commence operation north of Highway 5. Per MPCA's request, nearby residences will be notified concerning the system.

3M will continue remedial design activities, as appropriate, to be in a position to implement a remedy following MPCA final selection.

Woodbury

As agreed upon in a meeting with MPCA staff on June 25, 2008, an addendum to the FS Report was prepared by 3M and submitted to the MPCA on July 14, 2008. The purpose of this document is to provide a summary of the additional hydraulic evaluation that was performed in May 2008 and to present a refined Soil Alternative S-3 based on the October 2007 RI results and the results of the March 2008 soil sampling program. This report, *Addendum 2 to the Feasibility Study for the Woodbury Site, Woodbury, Minnesota*, contains the analytical results for the 4th round of groundwater sampling, the PFBA analytical results for the Main Disposal Area soil samples that were re-analyzed, and all of the data generated in performing the hydraulic evaluation over the recent Memorial Day weekend. Results from the previously referenced preliminary pre-acceptance soil sampling for non-PFC constituents will be used to complete the Remedial Design phase of the project and will be presented as part of the Remedial Design/Remedial Action (RD/RA) Plan, when it is submitted.

3M will continue to work with the City of Woodbury to complete the installation of the remaining pair of wells referenced in MPCA's letter dated January 9, 2008. In addition, sampling and analysis of all wells that have been completed will be performed.

3M will continue remedial design activities, as appropriate, to be in a position to implement a remedy following MPCA final selection.

All Sites

As requested and appropriate, 3M will support efforts to obtain approvals necessary to accomplish disposal of excavated soils from the three sites.

Response Action (Part VIII)

3M will continue to work with Washington County personnel to provide an alternative source of drinking water for the primitive campground area within the Lake Elmo Park Reserve. At present, 3M is awaiting County input concerning their preferred approach.

3M is working with Washington County to obtain an access agreement necessary to install a new Jordan aquifer monitoring well in the area south of Eagle Point Lake in Lake Elmo, MN (i.e., within the Lake Elmo Park Reserve). Once this agreement is finalized, the well will be constructed, developed and sampled.

Information Sharing Process (Part XIII.B)

Pending MPCA's response to 3M's letter dated April 14, 2008 on this topic, 3M is available to meet with MPCA personnel on an "as-needed" basis to discuss specific items relative to information-sharing. Irrespective of the formal determination of completeness relative to this part, based on discussions with MPCA personnel, 3M and the MPCA have agreed to continue regular meetings to share new developments and information that could be helpful in understanding PFC issues in Minnesota.

Health and Toxicological Studies (Part XIII.C)

3M will continue to share health and toxicological information on perfluorochemicals with MDDI as it becomes available. Monthly summary reports as previously described will continue to be provided.