

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BROOKLYN-QUEENS AQUIFER FEASIBILITY STUDY

CITIZENS ADVISORY COMMITTEE MEETING: JANUARY 9, 2003

MINUTES

The eighth meeting of the Brooklyn-Queens Aquifer (BQA) Feasibility Study Citizens Advisory Committee (CAC) was held on Thursday, January 9, 2003 at Hillside Manor Comprehensive Care Center. (Attendance list attached.)

Old Business

Helen Neuhaus, Helen Neuhaus & Associates Inc. (HNA), opened the meeting by noting that the session was being filmed as part of an educational video. She introduced Rick Meier, Rick Meier and Associates, and stated that his team had filmed a tour of the Station 6 Pilot Plant with CAC and Scientific Review Panel (SRP) members earlier in the day. Ms. Neuhaus also welcomed three additional SRP members -- Jack Caravanos, Hunter College; Gilbert Hanson, SUNY-Stony Brook; and Paul Liroy, Rutgers University -- who were attending a CAC meeting for the first time.

Following self-introductions and adoption of the Minutes of the November 7th CAC meeting without changes, Ms. Neuhaus facilitated a brief discussion of responses to issues and concerns raised at that meeting. These included the following:

- Manuel Caughman reviewed developments concerning the establishment of educational programs in District 29. He explained that a preliminary meeting with Karleen Comrie, District Science Coordinator and Randolph Ford, Principal of IS 59 on December 13th explored the possibility of setting up a science lab related to the Station 6 project at the school. A follow-up meeting is being scheduled with Deputy Superintendent Sheila Jackson.
- Mr. Caughman also reported that a meeting with elected officials will be held next week to further review plans for the community's proposed door-to-door cancer survey.

Ms. Neuhaus noted that the Station 6 Pilot Plant will be dismantled shortly and that any additional school or community tours should be scheduled in the near future. Groups or individuals interested in a tour should contact Ms. Neuhaus or Nicole Brown, Malcolm Pirnie, Inc.

Project Update

Donald Cohen, Malcolm Pirnie, Inc., reported that the project team continues to coordinate with the New York State Department of Environmental Conservation (DEC) regarding remediation activities at Station 24 and the West Side Corporation (WSC) site. In December, the project team briefed representatives of DEC-Region 2 on the status of the project. In addition, the project team recently received a copy of DEC's 30% Design Submittal for the remediation of the WSC site. The document, a detailed engineering report prepared by DEC's consultant, is currently under review and will be made available to the SRP and CAC. Mr. Cohen also explained that the legal departments of both agencies continue to work on the agreement for joint remediation of the WSC site.

Mr. Cohen informed the CAC that representatives of the New York City Transit Authority toured the Station 6 Pilot Plant and that the project team observed the remediation operation at the Jamaica Bus Depot. He noted that remediation operations are proceeding smoothly and that approximately 1,000 gallons of diesel fuel from the site are being collected each month (up from 100 gallons/month).

Station 24/WSC Update

Mr. Cohen reiterated that recovery and monitoring wells have been installed around the Station 24 site. Work continues on design of the process for treating recovered groundwater before it is discharged to the local sewer. Testing is under way to identify an appropriate process to effectively address the high levels of iron and manganese in the water. As a follow-up to a question raised at a previous meeting, Mr. Cohen indicated that the project team is examining the possible use of thermal catalytic oxidation at the site and will share plans with the CAC as they develop. He also reported that DEC is continuing to design its soil clean-up procedure for the WSC site. Shive Mittal, DEC, indicated that the final design could be ready by the beginning of March.

Station 6 Pilot Plant Update

Mr. Cohen reported that the pilot plant continues to test ozone as an oxidation tool and that the results look promising. A 30-day test of ozone's ability to oxidize iron and manganese is currently under way. Mr. Cohen offered his preliminary preference for this technology because it minimizes the use of chemicals. In addition, the nanofiltration/reverse osmosis technology continues to be effective. Technical memoranda to document the data generated, evaluate the various technologies used at Station 6, and present preliminary results are being prepared and will be distributed to the CAC and SRP.

Jeff Diggs asked if the recent increase in rainfall affected groundwater resources and what, if any, effect this would have on the project. Mr. Cohen explained that groundwater systems do not react to changes in precipitation as quickly as surface water. In addition to providing drinking water, he noted that the demonstration plant will be used to lower the groundwater table and subsequently reduce groundwater flooding in the area. Changes in drought conditions will have no effect on the project. Deputy Commissioner Douglas Greeley, New York City Department of Environmental Protection (DEP), agreed and added that the drought emergency has ended (reservoirs were reported to be at 93% of capacity). In response to a question from Kenneth Gill regarding the status of local well reactivation, Commissioner Greeley indicated that although a number of the wells have been sampled and repaired to bring them to drinking water standards, if needed, DEP does not intend to activate the wells at this time.

Linda Hazel asked if the contaminants captured at the Jamaica Bus Depot would have any effect on Station 6. Mr. Cohen responded that the diesel fuel plume will not affect Station 6, if the treatment facility at the bus depot continues to operate at its current rate. However, the project team is prepared for a worst-case scenario (an approaching diesel fuel plume) and would take well 6D out of service and use it only for remediation purposes if this occurred.

Scientific Review Panel

Ms. Neuhaus introduced the discussion by describing the role of the SRP, noting that the panel was formed to provide new perspectives, conduct independent testing and validate or dispute project findings. Observing that the CAC is an open, forthright and active group, Ms. Neuhaus stated that its interaction with the SRP will evolve over time, with the Committee assigning tasks to one or more SRP members as required by a specific issue. She suggested that possible SRP assignments be raised at monthly CAC meetings or, in between meetings, through her office. Ms. Neuhaus added that the SRP was selected unanimously from a strong group of candidates. She then invited the SRP members to discuss their backgrounds, qualifications and interests.

- Jack Caravanos, Program Director of the Environmental and Occupational Health Sciences Graduate Program at Hunter College, is currently conducting a study in Bedford-Stuyvesant

to determine the effects of indoor gases, allergens and molds on residents' health and to identify remedies that landlords could implement to reduce these effects.

- Gilbert Hanson, SUNY-Stony Brook, is researching the presence of nitrates in groundwater for the Suffolk County Water Authority. The goal of this study is to identify the origin of these harmful nitrates, in order to develop specific recommendations for reducing their presence in the drinking water supply.
- Paul Liroy, Assistant Director of the Department of Environmental Sciences at Rutgers University, has spent the last 30 years researching environmental health issues, with a particular emphasis on cancer and asthma studies and on the assessment of the health consequences of exposure to coal gasification plants, landfills, lead and arsenic. Dr. Liroy is currently assessing the health impacts on survivors of the World Trade Center disaster.

Report on Electrical Resistance Heating (ERH) Technology

Ms. Neuhaus introduced the topic by explaining that at the November 7th meeting, SRP member Alan Rabideau, SUNY-Buffalo, was asked to assess the use of ERH for remediation of the WSC site. Dr. Rabideau noted that although he is an environmental engineer, he has significant experience assessing public health risks associated with a variety of hazardous substances and has conducted similar assessments in the past.

In preparation for his assessment, Dr. Rabideau reviewed a number of documents (prepared between February 2000 and January 2002) related to the WSC site, including the Remedial Investigation/Feasibility Study reports (on- and off-site areas), Record of Decision (on-site area), Chemical Oxidation Report and ERH Feasibility Analysis. After review of the documents, he submitted questions to the project team, which were addressed in a conference call and in subsequent conversations and e-mails. Dr. Rabideau noted that the project is very complex and that he has been impressed with the openness and responsiveness of the involved parties. Despite this, Dr. Rabideau expressed some concern about the quality of the technical reports. Upon completing his initial analysis, Dr. Rabideau offered the following observations:

- 1) Restoring PCE-contaminated groundwater to drinking water standards is impossible, because PCE is difficult to remove and even harder to locate. However, the proposed pump and treat approach has the potential to stop the chemicals from reaching the drinking wells.
- 2) Treatment of groundwater is a dynamic, not static, process because the understanding of subsurface conditions can change each time the area is tested. As of now, ERH remediation is as good, if not better, than any other method for treating PCE-contaminated groundwater. However, since new treatment technologies are continually being identified, the potential exists for considering alternative technologies in the future.
- 3) The DEP-DEC partnership is unique and impressive. While no legal framework currently exists for the funding of the clean-up, the agencies are moving in that direction. The commitment and flexibility of the project team make it likely that this endeavor will be successful.

Dr. Rabideau then provided several recommendations:

- Collect additional data and install extra monitoring wells to address concerns about the technical details of the project (i.e. the unanticipated movement of PCE). Dr. Rabideau noted that DEC has agreed in principle to collect additional data and consider other items, as needed. He stressed that he is comfortable with the use of ERH, in conjunction with pumping, but recognizes that such an approach will not restore the site

to drinking water quality. However, this approach will serve to contain the PCE and protect drinking water at Station 6.

- The Record of Decision stipulated implementation of a rigorous groundwater monitoring program. It is important for the program to be formalized and made available to the public. The CAC would be a logical vehicle to accomplish this.

A summary of questions and comments related to the use of ERH and conditions at the WSC site is provided below:

- In response to a question from Mr. Gill regarding previous use and success of ERH technology, Dr. Rabideau explained that in the cases he reviewed, the treatment process was only intended to remove the hazardous substance, not to re-establish drinking water quality. He noted that there is an ongoing debate in the scientific community about the value of a treatment that removes some, but not all, of the contamination.
- Dr. Rabideau explained that treatment and monitoring of the site would be required as long as PCE concentrations remained above acceptable levels. He added that typically 90–95% contaminant removal is considered an effective treatment process. In a related question, Mr. Richards asked how 90–95% removal could be determined if the original quantity of PCE in the ground was not known. Dr. Rabideau explained that a percentage could be determined through extrapolation, but agreed on the questionable relevance of that number.
- As a follow-up to a question from Ms. Hazel, Dr. Rabideau indicated that physical containment of the plume is not feasible given its size and the uncertainty surrounding its movement. He then briefly described two containment methods: physical (i.e. building a wall) and hydraulic (i.e. pumping).
- Ms. Hazel asked how long it would take to complete the pump and treat process. Dr. Rabideau indicated that although 10 years is a typical timeframe, it is somewhat uncertain because the technology is relatively new.
- In response to a question regarding alternative treatment technologies, Dr. Rabideau indicated that steam injection, chemical flooding and chemical oxidation are other possible methods. He added that while chemical oxidation has shown promise, it is very expensive. Dr. Rabideau indicated that he is not concerned with the selected treatment technology, but rather with delineation of the sub-surface area.
- In response to questions from Ms. Hazel regarding the proposed depth of the extraction rods to be used as part of the ERH process, Dr. Rabideau indicated that PCE would not penetrate clay. Instead it would pool and move horizontally, once it reached the clay layer (no deeper than 45 feet). Dr. Rabideau reiterated his concern that the clay layer has not been sufficiently delineated, adding that although it appears to slope east, the current monitoring stations do not take this into account.
- In response to a question about the size of the contaminant source area, Commissioner Greeley indicated that DEC is internally debating this issue. Dr. Rabideau expressed concern about the accuracy of the designated source area, which is supposed to contain the bulk of the contamination. He acknowledged that if the designated source area is accepted as correct, the pump and treat process is likely to reduce PCE concentrations and keep the plume from spreading. However, if any PCE reaches the clay, it has the potential to move in non-intuitive directions, which would make it difficult to locate. In the discussion that followed, SRP and CAC members debated whether it is more reasonable to continue to study the problem or to move forward with remediation and additional monitoring. Dr. Rabideau recommended installing additional monitoring wells, primarily east of the site. Dr. Liroy suggested that the project focus on reducing the plume and source of the PCE as much as possible, in order to ensure safe drinking water from Station 6. Reducing the size of the plume would also reduce the concentration of contaminants under peoples' homes. He added

that although new technologies will emerge in the future, the current approach is very reasonable.

- When asked whether the PCE could contaminate any additional underground streams, Dr. Rabideau responded that a worst-case scenario would assume the presence of an unaccounted for underground pool of PCE. Ms. Hazel voiced concern that the community was previously told that the plume had not moved and that it did not learn more about this issue until the start of pilot testing at Station 6. She requested that the project team do whatever is necessary to ensure the safety of the water at Station 6. Dr. Liroy suggested that additional monitoring facilities be installed to account for the possibility of the plume traveling east.
- In response to a concern about the risk of spreading the plume through use of the recovery well at Station 24, Dr. Liroy suggested the possible use of two (2) pumps: one to capture the main zone of pollution, and a second to capture the residual. Dr. Rabideau indicated that the Record of Decision acknowledges this as a possibility. Mr. Cohen pointed out that the plume must only spread a short distance (from the source zone to Station 24) in order to be captured and treated. He assured the group that monitoring will occur to ensure that contamination is not spread any further.

In response to a question from Commissioner Greeley, Dr. Rabideau replied that he is primarily concerned that the technical reports do not adequately consider the possibility of PCE migration eastward along the clay layer. He emphasized the need for a reliable map of the clay, in order to accurately pinpoint the parameters of the area requiring remediation. In response, Mr. Cohen indicated that he provided Dr. Rabideau with additional DEC monitoring well and boring log data earlier in the evening. This data, which was obtained from locations east of Station 24, will help to complete mapping of the subsurface area. Other comments related to this issue included the following:

- In response to a question from Bill Yulinsky, DEP, Dr. Rabideau indicated that determining the number of data points needed to define the clay depended on the particulars of the site.
- Dr. Rabideau indicated that although a seismic survey is an option for defining the area, it is a very invasive procedure.
- Mr. Caughman mentioned that a hot spot to the east on 180th Street had been identified by a geoprobe survey.
- In response to a question concerning the possible use of ground penetrating radar to map the site, Dr. Hanson noted that this technology is unreliable beneath the water table.

Other Issues

- In response to Mr. Caughman's request for an update on the fuel tank leakage from the Amoco Gas Station at the corner of Liberty Avenue and Merrick Boulevard, Mr. Cohen confirmed that the tanks have been removed and that soil remediation (using the soil vapor extraction process) is under way. He added that polluted groundwater from the site is not being treated, because the plume is moving towards the treatment facility at the Jamaica Bus Depot.
- Peter Richards noted that a recent newspaper article discussed a cancer study in the area surrounding the WSC site and asked if any CAC members are involved in the study. Mr. Caughman responded that State Senator Malcolm Smith and Assemblyman William Scarborough have been given permission to conduct a cancer study within a 1-mile radius of the WSC site. Once information is available, it will be brought back to the CAC for review.
- A discussion followed regarding the existing and future use of the WSC site. (Currently, school buses are parked on the site.) Mr. Cohen indicated that both the community and city would like to see a productive use of the site in the future. In response to a concern raised by Deborah Hunte about the risk of exposure to bus drivers and students riding the buses, Dr.

Lioy indicated that the asphalt covering the site protects people from the release of volatile organic compounds (VOCs). Commissioner Greeley added that DEC conducted tests at the site and determined that VOC exposure is not a risk.

- Several persons expressed concern about the new homes being built to the north of the WSC site. SRP members and the project team agreed that contamination is unlikely, because the homes are located north of Station 24 and the plume is spreading south. Assemblywoman Barbara Clark asked if deed restrictions have been placed on the homes. Commissioner Greeley responded that DEP never sees development proposals and therefore has no authority over restrictions.
- In response to a number of questions raised by Kirk Dunbar, Dr. Rabideau provided the following information:
 - Although some natural degradation of PCE occurs, it is too slow to be considered significant.
 - The uptake of PCE through the soil to locally grown vegetables is probably not an issue and therefore would pose little potential danger to residents who garden. However, Dr. Rabideau noted that this is not his area of expertise.
 - The WSC site is too deep to excavate and treat. Dr. Caravanos added that significant community health concerns could arise, if the asphalt cap were removed and the site excavated.

The next CAC meeting will be held on Thursday, February 6, 2003 at 7 p.m. at the Hillside Manor Comprehensive Care Center, 188-11 Hillside Avenue, Jamaica Estates.

Follow-up Items

1. Request for locations of the 18 monitoring wells around the WSC site (Assemblywoman Barbara M. Clark). Responsibility: Malcolm Pirnie, Inc.
2. Arrange for additional school and community group (Concerned Citizens of Laurelton, Southeast Queens Concerned Neighbors) plant tours before the closing of the Station 6 Pilot Plant. Responsibility: HNA, DEP, Malcolm Pirnie, Inc.
3. Obtain results of EPA testing at WSC site from DEC. Responsibility: Malcolm Pirnie, Inc. [Paul Lioy and Jack Caravanos expressed interest in receiving this information]
4. Confirm if any sampling and/or testing was done inside residences in proximity to the WSC site. Provide copies of results and location of homes to SRP members. Responsibility: Malcolm Pirnie, Inc., DEC.
5. Provide Yvonne Reddick with Amar Naji's, DEC, telephone number. Responsibility: Malcolm Pirnie, Inc.
6. Provide testing results (workers at WSC site, new homes being constructed in the vicinity of WSC) to CAC and SRP. Responsibility: Malcolm Pirnie, Inc., DEC.

Brooklyn-Queens Aquifer Feasibility Study
Citizens Advisory Committee
Thursday, January 9, 2003

Attendance List

CAC Members/Alternates

Canute Bernard
Resident

Tracey Bowes
Community Board #12

Linda Caleb Hazel
A Better Day Inc./St. Benedict The Moor/
St. Bonaventure

Manuel Caughman
Community Board #12/Brinkerhoff Action
Association

Jeff Diggs
Councilman Leroy Comrie

Kenneth Gill
Addisleigh Park Civic Association

Richard Hellenbrecht
Community Board #13

Irving Hicks
Brinkerhoff Action Association

Debora Hunte
Brinkerhoff Action Association

Yvonne Reddick
Community Board #12

Peter Richards
Community Board #13

Rozalyn Shepard
New York State Assemblyman
William Scarborough

Michael Turner
Resident

Scientific Review Panel

Jack Caravanos
Hunter College

Gilbert N. Hanson
State University of New York at Stony Brook

Paul Lioy
Rutgers University

Alan Rabideau
State University of New York at Buffalo

Guests

Barbara M. Clark
New York State Assemblywoman

Cynthia Curtin
Wayanda Civic Association

Kirk Dunbar
CORPS of Environmental Educators

Sarah Hicks
Brinkerhoff Action Association

Cardinal Sandiford
Community Board #12

Tara Smith
Resident

Project Team

Don Cohen
Malcolm Pirnie, Inc.

Doug Greeley
New York City Department of
Environmental Protection

Natasha Harper
New York City Department of
Environmental Protection

Shive R. Mittal
New York State Department of
Environmental Conservation

Helen Neuhaus
Helen Neuhaus & Associates Inc.

Greg Vincent
Helen Neuhaus & Associates Inc.

Anita Wright
Helen Neuhaus & Associates Inc.

Bill Yulinsky
New York City Department of
Environmental Protection