Community Advisory Council
January 11, 2007
Action Items/Notes

Final

These notes are in the following order:

1. Attendance
2. Correspondence and Handouts
3. Administrative Items
4. Discussion with Regulators on the Five-Year Review, Doug Pocze, EPA, Chek Ng, NYSDEC, and Sy Robbins, SCDHS
5. Life Sciences at BNL, Fritz Henn, Associate Director for Life Sciences
6. Community Comment
7. Groundwater Remediation Update, George Goode, Division Manager, Environmental & Waste Management Services Division
8. Agenda Setting

1. Attendance

Members/Alternates Present:
See Attached Sheets.

Others Present:
C. Adey, M. Bebon, A. Carsten, J. Carter, F. Crescenzo, A. Csorny, J. D'Ascoli, B. Dorsch, G. Goode, F. Henn, L. Hill, B. Howe, S. Johnson, A. Juchatz, S. Kumar, B. Lee, M. Lynch, C. Ng, D. Paquette, S. Penn, G. Penny, D. Pocze, V. Racaniello, S. Robbins, J. Tarpinian

2. Correspondence and Handouts

Items one through four were mailed with a cover letter dated January 5, 2007. Items five through seven were provided in the member's folders.

1. Draft agenda for January 11, 2007
2. Draft notes for November 9, 2006
3. Final notes for October 12, 2006
4. Copy of the CAC recommendation to the Lab Director on g-2
5. Copy of presentation on Life Sciences at Brookhaven National Laboratory
6. Copy of presentation on Groundwater Update
7. Copy of color maps for Groundwater Update

3. Administrative

The meeting began at approximately 6:34 p.m. Those present introduced themselves. Reed Hodgin reviewed the ground rules and the draft agenda. Reed told the CAC that Elina Alayeva of the Pine Barrens Society asked for time to speak prior to the start of the regular agenda.

Member Sprintzen said there was a new member present and asked that he be introduced. Jeanne D'Ascoli introduced Scott Krsnak of IBEW Local 2230 and told the CAC that she had received a letter from Mark Walker in which he stated that even though he had enjoyed being a member of the CAC, he would no longer be able to serve. Scott Krsnak would now represent the IBEW Local 2230. Jeanne welcomed Member Krsnak to the CAC and thanked him for

volunteering to serve. Member Sprintzen requested a letter be sent to Mark Walker on behalf of the CAC to thank him for his service and wish him well.

Reed asked for corrections, additions or deletions to the draft notes for November 9, 2006. Member Proios asked that the word “areas” be changed to “counties” and the phrase “hazardous emergency” be changed to “disaster” in his statement on page three. The notes were approved, with no objections and four abstentions.

Reed introduced Elina Alayeva who said she was speaking on behalf of the Pine Barrens Society and explained that she couldn’t wait for the agenda setting at the end of the meeting to make the request as she had to leave to attend the Broadwater hearing. She said that periodically organizations find it useful to review their purpose, mission and functionality and the Pine Barrens Society would like to invite the CAC to do this. She had several questions for the CAC to discuss at the next meeting such as what the purpose and mission of the CAC is, what is working and what isn’t, and what the CAC can do to improve and work better with the Lab. Member Alayeva said it would be useful for new members such as herself, as well as for long term members, to speak to the groups and organizations they represent in preparation for a discussion on what the CAC means, what the CAC is supposed to be doing and how the CAC is doing. She asked for time on the next meetings’ agenda for the discussion.

Reed said it is often a good idea for a group to periodically examine itself and how it operates. He said it was an excellent suggestion and opened the floor for discussion.

The CAC members discussed the request among themselves with some members questioning the Society’s intentions and others saying that they didn’t have any problem with the proposal. Member Henagan asked Member Alayeva what the questions were.

Member Alayeva read the questions as follows:

1. Has the mission or purpose of the CAC changed?
2. What is working and what isn’t working?
3. What changes to the composition and process would improve the CAC as we go forward?

There was additional discussion on the issue and CAC members asked for additional information.

ACTION ITEM: Provide a list of accomplishments, products, correspondence and recommendations produced by the CAC.

ACTION ITEM: Provide a list of groups originally contacted for membership to the CAC.

Member Henagan asked if the time between meetings was enough time for everyone to speak with their groups and get feedback on the questions posed by Member Alayeva.

Reed asked if the CAC could be reasonably prepared by the next meeting and if they were in agreement to put this discussion on the agenda for next month.

Member Evanzia did not think the discussion was needed.

Reed called for a vote on the item. A vote was taken with three opposed and no abstentions. Time for the discussion would be placed on next month’s agenda.

George Goode gave an update to the CAC on the investigation of a potential tritium release from the Sewage Treatment Plant (STP). The monitoring program produced data from

continuous sampling at the plant that indicated there were levels of tritium in the effluent that measured at 1,000 pCi/L. He said this was a very low level though still detectable. Previously the data had reflected non-detectable levels. The elevated levels occurred from December 1 through December 15, 2006. This prompted an immediate investigation of the known possible sources of tritium at the Laboratory. The HFBR was examined and all samples tested from the manhole monitor outside the HFBR were at non-detectable levels. All cooling water systems at the accelerators that had potential to accumulate tritium were studied and there were no unusual indications. Several of the Life Sciences facilities were examined because tritium is used there as a tracer element and all materials were accounted for. Currently, the source of the tritium has not been identified. There is a question as to whether or not this was a real result. On January 11, samples were taken from the same effluent and they were found to be non-detect. Split samples taken of the remaining samples were sent to the same laboratory that rendered the original results and to a different laboratory to see if the result could be confirmed. Goode assured the CAC that the level detected was well under the administrative control limit of 5,000 pCi/L and reminded the CAC that the drinking water standard was 20,000 pCi/L. He said the investigation will continue and the CAC will be kept informed.

Member Jordan Sweet asked how many samples were taken during the 15-day period and if there was more than one sample taken in a day.

Bob Lee, Compliance Manager for the STP, said there are flow proportional samplers that measure both the influent and the effluent concentrations. There is a sample taken every two to three days.

Goode said the samples, taken on Monday, Wednesday and Friday are representative of the flow for either 48 or 72 hours.

Member Giacomaro asked what the normal reading had been, if that was in the pool, which locations were checked, if it was possible to examine the pipes that carry the waste and if the tritium detection could be attributed to a rise in the water table.

Goode said prior to this they had been logging non-detectable levels. The detection limit for the compound is 300 pCi/L in the influent and the effluent of the STP, which is essentially background. Goode said that some pipe locations such as the one outside the HFBR sample automatically. That sample data was checked immediately because it was a likely source. It was also found to be non-detect. There is analytical data that shows the results returned to background levels on December 15, 2006. There had not been an opportunity to reexamine the sample because it takes time for it to come back from the laboratory. The data had been explored to determine if there was a possibility of water in the pipes that could have contributed to the findings. The concentrations available to infiltrate the sewer system would not result in that kind of level when combined with all the flow from the Lab.

Goode said the HFBR, all cooling water systems at the accelerator systems and authorized releases were checked. The Liquid Effluent Release program is a procedure that requires testing and authorization from Lee's group to allow for tank releases into the system. The records of those authorized releases were examined. None of those were likely sources. He said likely sources for releases are well known but there is still uncertainty about whether or not the analytical result is a legitimate one. Goode said they would continue the effort to identify any other likely source.

Member Giacomaro asked if the reading was okay now. Goode replied that it was.

Member Talbot asked for the duration of the detection period.

Goode said it was between December 1 and December 15, 2006.

Member Martin asked if the detection was on the influent side or the effluent side of the flow.

Goode said both. The average concentration was 1,000 pCi/L on the effluent and slightly higher on the influent.

Reed asked if the CAC would like to have an update at the next meeting. The CAC indicated they would. Reed put it on the agenda for the next meeting and thanked Goode for the briefing.

Les Hill gave an update on the HFBR and the BGRR projects. The last few months have been spent revising the HFBR Feasibility Study (FS) to address regulators' comments. Recalculations and reanalysis are being incorporated into the FS. Hill said much of the focus involved the control rod blades, which had been of particular interest to the CAC. The FS should be submitted to the Department of Energy (DOE) later this month and submitted to the regulators in March. The work on the Proposed Remedial Action Plan (PRAP) will follow immediately after.

Hill said the engineering for installation of additional detection equipment at various locations of the HFBR in response to the HFBR flood event was complete. The system reviews and maintenance requirement updates have been done. The first batch of water was processed. The technique is being examined to determine the best course of action to complete the disposal of the water.

Hill told the CAC that key milestones were completed for the BGRR in November. Samples of graphite were analyzed to determine the best way to handle, package and dispose of the material and to gain a greater understanding of how the graphite will behave once it is removed from the bio-shield. An extensive safety analysis required by the DOE was prepared and the DOE is currently reviewing the reports. The regulations for this project are very similar to the regulations of the Nuclear Regulatory Commission (NRC) and what was seen at the Shoreham Nuclear Power Plant.

Member Proios asked if the $110,000,000 for funding the BGRR clean up was still in place.

Hill said the funding is in place for this fiscal year (06'–07') and next (07'-08'). He said that this was a planning year and they are working on engineering, conducting detailed preparation, procedure writing and special tools qualifications. Nothing will be disassembled this year.

Member Proios said none of these projects last a single year. If a project lasts multiple years and at the mid-point the just money isn't there, what is the contingency plan? The project can't just be stopped in midstream. Member Proios said his concern was in order to fund RHIC money would be taken from other DOE projects. Would money be taken from environmental restoration in order to keep the science going at RHIC?

Crescenzo said there is no plan to do that at the DOE. Generally, that is the challenge but it is not affecting this project.

4. Discussion with Regulators on the Five-Year Review, Doug Pocze, EPA, Chek Ng, NYSDEC, and Sy Robbins, SCDHS

Doug Pocze of the Environmental Protection Agency (EPA) gave a presentation to the CAC on the Five-Year Review. He said though the Department of Energy (DOE) is the lead on the process, the role of the EPA is in concurrence with the Protectiveness Statement. The EPA requires a review every five years of any remedy for which waste remains with contaminants above unrestricted levels. The rational for this is to assure that the remedy is still protective over time. The first Five-Year Review for Brookhaven National Laboratory (BNL) was done on the Operable Unit (OU) IV Record of Decision (ROD) in 2003, which was the Building 650 Outfall.

At that time, it was determined that a comprehensive facility-wide Five-Year Review would suit BNL. The draft Five-Year Review document was submitted in July 2005 and the final document was submitted in July 2006. The EPA concurred on August 9, 2006. The next Five-Year Review will occur in 2011.

Pocze said various EPA support staff members such as risk assessors, ecologists, and radiation specialists review the remedy document when it is submitted in order to determine if the remedy is functioning as intended by the decision document. They look to confirm that the assumptions of the remedy documents are still valid and if there is new information that would pose a question as to the protectiveness of the remedy. The document flows from DOE to the EPA and then to other regulators at the county or state level to provide opportunity for input. The Director of EPA's Emergency and Remedial Response Division provides final concurrence on the Protectiveness Statement. General comments that arose during BNL's Five-Year Review involved the Land Use Control Plan, HFBR and Risk Assessment. For example, like questions asked earlier, as circumstances change over time, how will this effect the remedy? How will people and the environment be affected as circumstances change? This gets processed under Risk Assessment.

Pocze concluded his presentation and Reed convened the panel for discussion so that the CAC could ask questions.

Member Garber said the purpose of the invitation was to get comments from the regulators on their concerns related to the Five-Year Review in order to provide direction to the CAC.

Pocze said the main emphasis of the review is to determine if the remedy is still protective, though BNL constantly provides updates to the regulators. The Annual Groundwater Report and the quarterly reports are being processed continuously. By the time of the Five-Year Review, for example, if a monitoring system is being evaluated, many answers to questions have already been incorporated in the reporting.

Chek Ng of the New York State Department of Environmental Conservation (NYSDEC) said his predecessor was involved with the Five-Year Review that was performed last year. He reviewed the comments made by the state and said the comments came not only from the NYSDEC but also from the New York State Department of Health (NYSDOH) and NYSDEC radiation specialists. Issues at the state level were centered around textual changes such as adding more details on contaminants mentioned in the report. Another involved the HFBR operable units and the inclusion of the HFBR in the ROD. Ng said the HFBR had not been included when the draft Five-Year Review was issued and the state wanted it included. The DOE sent a summary of comments from the NYSDEC, NYSDOH, the radiologists and consultants and all of the comments were satisfactorily addressed.

Pocze said when the draft Five-Year Review was issued, discussions with the NYSDOH focused on the HFBR and they wanted to insure there would be a ROD to cover it. The NYSDOH also had concerns that the pipelines carrying steam and water running in and out of the HFBR complex would be adequately addressed, which they were. That was the main concern of the Health departments.

Member Giacomaro asked for clarification of a significant and fundamental difference as related to the discussion on the PRAP for g-2 that occurred at the last CAC meeting.

Pocze thought Member Giacomaro was asking about changing a ROD (the Explanation of Significant Differences amendment). He said the ROD amendment was done a while back and this discussion was about the Five-Year Review document.

Reed said he thought this came from another discussion but that this panel may be the correct resource for clarification. The question was what does it take to open a ROD again as opposed to what it would take to declare a significant difference?

Sy Robbins of Suffolk County Department of Health Services said when looking at the ROD, there is a review of subsequent changes or Explanation of Significant Differences that accompanies the ROD.

Member Giacomaro asked if the ROD would be reopened if a fundamental difference were declared.

Robbins said not necessarily, that is an alternative. The definition of the terms is an EPA issue.

Pocze said there could be a ROD amendment, which would be a major change to the to the remedy. The process would be initiated, including things like public notice and responsiveness summaries. Or there could be an Explanation of Significant Differences (ESD), a change in the ROD, which is not considered major. This was done on the OUIII ROD. In that case, only certain characteristics of the ROD are changed.

Member Giacomaro said he was asking in reference to the PRAP for g-2, what would be considered a significant difference and what would be considered a fundamental difference?

Pocze said that could not be determined until there was a ROD issued for g-2.

Member Campbell said he thought the question was one about process. When things don't go as expected, what happens then? What kind of changes can be made? What triggers the changes and who is responsible for raising a red flag and saying something has to be done?

Reed asked what would happen if a Five-Year Review occurs and one of these issues is triggered in a significant way.

Pocze said if the Five–Year Review resulted in significant questions, and it was found that the remedy was not being protective, investigations would be reopened to determine why. That could mean just more sampling or reevaluating the entire alternative. That is one of the purposes of the Five-Year Review.

Member Giacomaro asked if a ROD could be changed at that point.

Pocze said if the investigation found that the remedy was not protective, the ROD could be reopened.

Member Giacomaro asked if the specifics of the recommendations developed by the CAC would be accepted as indicators of a fundamental difference as opposed to a significant difference.

Reed asked if there were specific triggers placed into a ROD, such that if you exceed a certain amount….

Pocze said there would be triggers with regard to some type of contingency, not necessarily with regard to whether it is an ESD or a ROD amendment. There would be triggers such that if through monitoring the results were found to be above a certain level there would be a contingency.

Member Giacomaro asked if the EPA would accept the triggers as specified by the CAC.

Reed said the relationship with EPA is with the DOE not the CAC. The CAC recommendation is to the Laboratory and that would come through the DOE to the regulators, not from the CAC to the regulators.

Member Guthy asked if decisions made are based on site visits or information provided by different sources.

Pocze said they use information from different sources. The DOE is the lead agency. The EPA or county could decide to take split samples and that might be incorporated into the process. During the Five-Year Review interviews are conducted with regulators and others from the DOE. That gets factored into it. The Annual Groundwater Review documents are incorporated and are commented on.

Member Guthy asked if the EPA worked with the written information or if they visit the site.

Pocze said the EPA will go to a site but they do not perform a specific checklist. The DOE works with a checklist. There is a checklist for each of the sites. The EPA evaluates written material.

Reed offered clarification to the question and asked who puts the Five-Year Review package together, who is the lead agency and how does that interface with the other agencies?

Pocze said the DOE compiles the Five-Year Review. It is circulated to the regulators for review and comment. The EPA issues a protectiveness statement that declares the remedy is still functioning as intended. Comments made by the county, state and the EPA get factored into that.

Reed restated the package was put together by the DOE and then sent to the regulators who review it, ask questions and draw conclusions.

Member Chaudhry asked is this more of a desk audit? You don't really get involved with physically coming to the site?

Pocze said yes, with Brookhaven that is correct. They put together the information and we review it.

Ng said there are occasional instances where the regulators or DEC want to make sure that a specific cap was put in place or something like that. The DEC would put a call out to the site for a tour. Brookhaven personnel would give explanations about how the cap is functioning or perhaps, where wells are. The DEC does try their best to determine that everything in the document is also translated into what is seen when the site is visited.

Member Shea asked how long the review takes? Does it depend on documents and how many people are involved? Does it take months or weeks? Is there community input during any part of this process?

Pocze said the document covers the whole process. It is three inches thick and covers six months to a year depending upon the size of the facility. Usually Five-Year Reviews cover one OU and there is a smaller amount of information in it. This takes about six months for comments back and forth and could be circulated to five or six people. There are briefings within the Agency as well as with the director who makes the decision. That also takes into account the comments from the county and state. The community involvement occurs at the federal facility. The DOE briefs the CAC but there is not a public comment period.

Member Garber asked if the regulators were comfortable with the characterization of the various facilities on site?

Ng said yes. All the DEC's issues and concerns were addressed. The responses to our comments were reviewed and we were satisfied with them. If we were not we would pursue it further. Sometimes the process goes back and forth a few times, other times we are satisfied immediately. For this Five-Year Review we were satisfied with the response from the DOE.

Member Sprintzen asked if there were any items that needed to be changed during this review?

Pocze said they worked with the DOE on vapor intrusion issues. This has become a topic within the Agency lately and they are doing an assessment towards characterization. The Agency has denied protectiveness statements during other Five-Year Reviews and has reopened the process. EPA has a checklist and comments on items from the checklist have been made, but it hasn't changed the remedies or protectiveness of anything that was selected.

Member Sprintzen asked for an explanation of vapor intrusion.

Pocze said groundwater and volatile organics are checked for vapor emissions. An assessment is done to determine if there is a clean layer of groundwater above the contamination, particularly in areas where there are homes. If the contamination is deep below ground and protected by the clean water layer it is not a cause for concern to the EPA. Assessments have been initiated to check for vapor emissions in areas upstate where the contamination is closer to the surface and the protective water layer is not detected.

Ng said the remedies that were proposed in the current Five-Year Review were satisfactory.

Robbins said the County had some concerns about the Peconic River clean up. The concerns were raised prior to the Five-Year Review as part of the ongoing discussions related to monitoring technique. And, as a result of last year's Groundwater Report, suggestions were made for the placement of additional monitoring wells. Brookhaven is different from most sites because there is continuing dialogue. There are discussions each week and data is shared on a very timely basis. The way this is working is very effective.

Member Proios asked what the value of the Five-Year Review was? If there is only one review in five years when the RODs are not all completed, it seems like there is a big gap. Once the ROD is completed, it makes sense to reopen the ROD only if there was information that something is not going the way it is expected and there needs to be a change, but I do not see the value of looking at all the Operable Units (OUs) in the Five-Year Review only once every five years.

Robbins said the County is looking at the data as it's coming in. They talk weekly on a conference call with DOE and BNL and any information pertinent to monitoring results is presented so they're not waiting for the Five-Year Review. That's something that's established throughout the federal Superfund program. It's used here and at every other site but its not like the Five-Year Reviews are relied on.

Reed asked if it might be characterized as BNL undergoing continuous review rather than a Five-Year Review and the regulators agreed. Reed thanked the CAC and panel for an excellent discussion.

5. Life Sciences at Brookhaven National Laboratory, Fritz Henn

Fritz Henn, Associate Laboratory Director for Life Sciences gave a presentation on the current status and future direction of Life Sciences at the Laboratory. He said that the Biology Department produces excellent science related to national needs and the DOE and other agencies missions. The department is working on biofuels, detection of toxins for Homeland

Defense and doing work for the National Institutes of Health (NIH). The Laboratory's Biology facilities include: National Synchrotron Light Source (NSLS) Macromolecular Crystallography; Scanning Transmission Electron Microscope (STEM); NSLS Ultra Violet Circular Dichroism (UV CD) and Florescence Spectroscopy; NASA Space Radiation Laboratory (NSRL); and Cryo-electron Microscope.

Member Sprintzen asked if the energy focus was biofuels. Henn said that is the aspect of energy that Biology is focused on. That is not the Laboratory's energy strategy. Brookhaven will have a larger strategy.

Henn said current Biology research areas include Microbial Systems, Membrane Proteins and Structural Genomics and Molecular Imaging. The department is also working on Mammalian Cell Systems, which deals with the study of changes in genetic expression that lead to cancer cells.

Member Sprintzen asked if Brookhaven was coordinating with Cold Spring Harbor Laboratory on any of the efforts. Henn said work on ribosomes is being conducted in partnership with Bruce Stone at Cold Spring Harbor Laboratory. Plans for the future involve extensive collaboration with Cold Spring Harbor.

Member Evanzia asked if there was a specific reason that Japan and Germany are vulnerable to economic ruin due to Alzheimer's. Henn said they both had aging populations. The children who are now the baby boomers didn't tend to reproduce.

Henn said BNL's Energy Bioscience Program is researching feed stocks that may produce more energy. The main research program in this area is Modification of Plant Lipids. Several new initiatives such as the Quantitative Analysis of Central Metabolism and Biomass Synthesis, Understanding the Molecular Basis of Pathways that Prevent Losses from Insects and Disease, and Bio-Hydrogen are under way. Currently, the poplar tree is being studied and engineered to grow faster, though relatively weaker, to facilitate the simplification of the ethanol production process. The Laboratory shows particular strength with genetic engineering and redesigning plant lipids to produce a much more efficient fuel.

Member Giacomaro asked what part of the tree would be used. Henn said the whole tree except the leaves. Member Giacomaro asked if just the leaves could be used and developed as a crop. Henn said they could be used but the leaves would not be enough. The trees can be designed to grow four feet per year and can be harvested and grown on land that could not be used for anything else. They could be a renewable crop.

Member Shea asked if the genetically engineered weakness poses a problem with storms. Henn said the key is to make the trees just weak enough. The thought is to design them so that they stay strong through the entire growth phase. The year they are to be harvested, the metabolic pathway would start degrading the trees before they are actually cut.

Henn said while at Stony Brook University he was involved with the Brookhaven Medical Department in developing the Positron Emission Tomography (PET) scanning program. The technique was developed in part at the Laboratory and has been hugely successful in contributing to the understanding of the workings of the brain. The work done by Nora Volkow, Joanna Fowler and Gene-Jack Wang defined the reward system in the brain, critical to the understanding of afflictions such as cocaine addiction, obesity and depression.

Member Evanzia asked if the findings could relate in any way to the study of Parkinson's disease. Henn said absolutely, because dopamine is involved with Parkinson's and is one of the elements measured in this research. The Lab has an enormous history with this. The whole idea of dopamine therapy was developed here.

Henn reviewed the Imaging instrumentation currently used by the Medical Department for research. Henn said to study disease the focus is on changing a single gene and observing how the gene affects the circuit that mediates the behavior. He said a partnership is being forged with Cold Spring Harbor Laboratory in this area. Brookhaven's milestones include Imaging in Addiction, Awake Animal Imaging, the high-resolution mouse brain, ATLAS, and other innovations. Almost all of the cancer screening used in medicine today involves PET. Henn said it is important to keep the Medical Department going even though the budget had suffered a reduction. Continuing to design and develop new instruments such as the Optical Fluorescence Probe and the RatCAP, Henn said, is the kind of work the DOE and the National Institutes of Health (NIH) should be interested in. Because the lack of patients to study is a challenge for the program, Henn foresees Memorandums of Understanding (MOUs) with medical schools and institutions with required expertise and patient populations. Current partners are Stony Brook, Mt. Sinai Medical School, NYU, and Cold Spring Harbor Laboratory.

Henn told the CAC that the Laboratory is one of only four facilities in the world that produce high-energy isotopes in medical usage today. There is no funding for this in the United States. What is needed is a 70-mega volt (MeV) cyclotron, which would allow for yearlong production of isotopes for the entire country. The DOE is awaiting a recommendation from the National Academy of Science as to the location of the cyclotron. Henn is hopeful that it will be located at BNL.

Member Evanzia asked for the names of the specific isotopes of interest and if cobalt-60 was one of them. Henn said there is a list of about six including strontium-65 and copper isotopes that may be useful in cancer that no one has developed. Henn said cobalt-60 was one but he did not know all of them.

Member Martin asked if this instrument would develop just two isotopes or many. Henn said it could develop almost anything.

Member Sprintzen asked if there were potential environmental problems with isotope production. Henn said there could be, but if the Medical Department had their own cyclotron the environmental challenge would be about disposal, which is very manageable. Everything remains in a contained environment. There is no potential groundwater issue because it is all solid material.

Member Evanzia said problems with x-ray versus MRI is cost and time of operation. Henn agreed.

Member Guthy said she was proud to be affiliated with the Laboratory and said there should be more of an effort made to inform the public of these ongoing innovations. Henn said the Addiction Program, which is seeking to develop a drug to eliminate cravings for cocaine and other drugs, has been receiving enormous publicity. Stephen Dewey, the person who developed this, gives over 100 talks in schools throughout the year. The Laboratory does publicize in medical papers and he has binders full of the newspaper articles in his office.

Member Proios said when he taught science he tried to teach the kids that even though the sciences are taught as disciplines, they all work together. There is never a plan to put them together so that as a senior a student can take one class that shows how all the sciences are related. It seems the Lab has the same problem, trying to convince people at DOE that there is an interrelationship. When the CAC had a presentation on nanotechnology, very little if anything was mentioned about biology and now, during a presentation on biology very little is said about nanotechnology.

Henn said an enormous program is being developed with biology and nanotechnology. Think about the brain and psychology. Psychotropic drugs are almost all relatively ineffective and have high side effect rates because the brain is very complex. For example, in Parkinson's dopamine would be targeted to the motor piece of the dopamine system, nowhere else. If Parkinson's patients receive high doses of dopamine, they get crazy, but they move better. They literally have hallucinations because dopamine lies behind schizophrenia. If just the motor portion of the brain can be targeted, then that will be avoided. How about if the dopamine is inserted in a nanoparticle and the nanoparticle is coated with an antibody that is specific to just the part of the brain that is targeted? It is not going to be as simple as just presented, but Henn thinks that is the future of pharmacology. The Laboratory has begun to recruit people to specifically do that work.

Member Sprintzen said he was fascinated by the presentation. He asked if it could be broken down and if over time the different areas could be presented in greater depth.

Member Garber said it was a great presentation and asked if a reference or a name of an Alzheimer vaccine program could be provided.

Henn said the Harvard group had done that technical work. The leader of the group is Dennis Selkoe. If you look up Dennis Selkoe online fairly technical review articles that will give you a sense of what is happening with that will be found.

Member Henagan said another benefit of nanotechnology in the biology area is its superconductivity. Superconductive materials are very important in making the cryomagnets that are used in MRI systems. If progress can be made to bring superconducting materials to close to room temperature, liquid nitrogen or pressurized liquid CO_2 cooling systems could be used instead of liquid helium which is extremely expensive. Then possibly MRI systems could be put everywhere. With breakthroughs in nanotechnology and superconducting, which are happening, this type of technology gets cheaper.

Reed and the CAC thanked Fritz Henn for his presentation.

6. Community Comment

There was no community comment.

Reed announced that Member Conklin had brought in a diagram that had been found in a barn in Riverhead. It looked like something that might be found at BNL. It was a drawing of what looked like an old physics device. The lettering on back of the drawing was "LMFR". He asked if anyone recognized it or could identify it to please see Member Conklin.

7. Groundwater Remediation Update, George Goode

George Goode presented an update on groundwater remediation. The presentation provided the CAC with information on the communication processes related to groundwater remediation, the protection and monitoring of the groundwater, and the remediation process including the operational status of treatment systems, the progress toward achieving clean-up goals and proposed actions in response to monitoring data. Goode encouraged discussion and asked for feedback from the CAC.

Goode told the CAC the main communication processes include weekly Interagency (IAG) calls with regulators, quarterly Systems Operations Reports and Annual Groundwater Status Reports. The Annual Groundwater Report contains summaries of systems operations, the year's monitoring data, and any recommendations for modifications for the year. The report is

available on the web. Additionally periodic updates are provided to the Brookhaven Executive Round Table (BER) and the CAC.

Goode told the CAC full size color copies of the maps he would be referencing had been provided for them. Goode explained there were two main groundwater programs managed by the Long Term Response Actions Group (LTRA), the Groundwater Protection Program and the Groundwater Remediation Program. The mission of the Groundwater Protection Program is to protect groundwater quality by establishing monitoring programs for active and planned facilities, evaluating and modifying data and to develop effective controls. The Groundwater Remediation Program includes the work done through CERCLA to install remediation systems for the Peconic River and soil clean-up programs. Goode said the Groundwater Monitoring Program was comprised of a network of 740 wells in the Restoration Program, which take 2,300 samples annually, and 125 wells in the Facility-Monitoring Program. The wells in the Facility-Monitoring Program were upgraded in the last decade and approximately 300 samples are taken annually.

Under the Groundwater Protection Program wells are placed around potential sources prior to contamination. Accelerator facilities, petroleum storage facilities, gas stations, medical reactors, the Sewage Treatment Plant and the Waste Management Facility are monitored. The wells are sampled periodically to verify the controls are working.

Member Giacomaro asked if the monitoring well networks are two separate entities or if they could be used to serve the same purposes. Doug Paquette said all the wells on-site are used for tracking groundwater flow directions. There are some wells that are used for environmental restoration but the information is also used to help monitor facilities. There is some synergy between them. Some of the wells could be used for both purposes.

Member Talbot asked if the different colors of the dots on the map that represented the wells had particular meaning. Bob Howe said all the dots were representative of wells. Reed clarified that there was no particular reason for the colors.

Goode said the Groundwater Protection Program identifies potential threats. The site monitoring well network involves wells that are installed to monitor groundwater levels, characterize flow direction and establish background levels. They are secondary systems, in place to ensure the primary systems are functioning correctly.

The Groundwater Remediation Program is comprised of 13 Volatile Organic Compound (VOC) groundwater treatment systems, six of which are located off of the Laboratory property and three are radiological groundwater treatment systems. The radiological systems treat the HFBR tritium plume, the Chemical Holes plume, and the Sr-90 plumes. Additionally there are other plumes monitored such as the OU V VOC plume and the g-2 and BLIP tritium plumes.

Goode presented a timeline on treatment systems status and told the CAC that most of the systems are expected to end in the 2015 time period. The monitoring period for the other systems will end in 2030. He said the OU IV Sparge/Soil Vapor Extraction System was shut down because it achieved its clean-up goal. Three systems are in stand-by and four are in pulse-pumping mode. There are systems that are operating with no planned changes and systems for which modifications are planned.

Goode provided the CAC with more detail on the modifications planned in the VOC and radiological systems. Since 1997, 5,700 pounds of VOCs have been removed by pumping 11 billion gallons of water. Many of the higher concentrations of VOCs have been cut off by the treatment systems along the site boundary and elsewhere. Goode said the plumes are definitely shrinking and the lower to higher concentration proportions are being effectively dealt with by the systems.

Member Talbot asked what the letter “T” indicated in the abbreviation TVOC. Goode said it represented the word “total”.

There has been 10 mCi of Sr-90 removed from the three radiological systems to date. The resin that was selected for ion exchange polishing to remove the Sr-90 is performing better, lasting longer and proving to be more effective then expected.

Member Proios asked for clarification on the resins and asked if there were still problems with other things picked up by the ions in the systems and attaching themselves. Is this an area that would have that problem?

Vincent Racaniello said they have not seen a problem with the ions picking up random materials. There are not many systems that have been put in place to treat strontium so the result was harder to predict, unlike carbon, for which a tremendous database exists and how long it will last can be determined. It seems that the resin is lasting at the higher end of our expectations.

The first VOC system where changes have been recommended is the Airport plume. Goode said data from the monitoring wells that are slightly west of the extraction wells indicates an increase in VOCs. Goode’s group is currently characterizing the location of the plume using temporary wells and is preparing the design for an additional extraction well, which has already been discussed with regulators.

Member Garber asked if this was the same as the Precision Concepts plume. Goode said this was the Airport plume. Member Garber asked if this plume was the same depth. Bill Dorsch said the position of the Precision Concepts plume was further west and is about 100 feet below the ground’s surface. This one is about 180 to 200 feet below the surface.

Member Giacomaro said extraction wells already existed at the airport site and yet the plume moved west. He asked what that could be attributed to and if the wells had any effect on the flow. Goode said the plume is moving with the flow of groundwater. Dorsch said the extraction wells, which were installed in 2002 and 2003, were positioned based on predictions of the flow in that area. Goode said the plume shifted 200 to 300 feet to the west, which is not a great distance when making groundwater predictions. The new well will be positioned so the high concentration material doesn’t pass by.

Member Giacomaro asked if that would also have a discharge for treatment. Racaniello said the water is pumped to the airport and treated by the carbon vessels there.

Member Chaudhry asked for clarification of the contour lines on the map being used to discuss the Airport plume. Goode offered clarification of the different contours.

Goode said another area being examined is the source area in the Building 96 VOC plume. It contains a low permeability zone 20 to 30 feet below ground surface, which is comprised of a silty soil zone. The tetrachloroethene (PCE) is not decreasing in the low permeability zones as projected. Remedial alternatives are being reevaluated for the source area in 2007 to ensure the remediation goal of 30 years is reached.

Member Conklin asked what work had been done at Building 96. Racaniello said it was a storage building. The Army and the Lab had used the area as a truck wash. There were solvents that had been used there and apparently the silty areas absorbed the material.

Member Proios asked if the samples had been analyzed to see if there were any other organic compounds that might be oxidized before they reach the PCE? Dorsch said the problem is that

the soil in that area (permeability zone) is so tight that it is difficult to insert the Potassium Permanganate injections used to treat the PCE into the material. It seems to move the PCE away and then it just comes back.

Member Garber asked what the composition of the soil 20 to 30 feet below the surface was? Dorsch said it is clay silt, which is a very tight soil.

Goode said the HFBR plume has been extensively monitored. The HFBR ROD has a contingency in it that requires a restart of pump and recharge wells if levels of 20,000 pCi/L at Weaver Drive were detected. Monitoring results triggered the contingency in November 2006. Geoprobe samples were taken in the last few months to accurately characterize the position of this plume. One recommendation that will be made to the regulators will be to install another well closer to the plume, about 300 feet south of Weaver Drive. The Lab will be able to start the well in a more timely fashion and directly address the higher concentration area.

Member Garber asked since it takes time to drill the well, if the well would be started so that the high concentration will arrive at the well at that point. Goode said the construction of the extraction well would commence this fiscal year. Dorsch said it is hoped the well will be in by the summer and pump for about two years to capture the entire length of higher concentrations. Goode reminded the CAC that this is a pump and recharge system.

Goode said there was additional characterization performed as a result of increases of Sr-90 detected at the Chemical Holes plume. The monitoring downgradient of existing extraction wells is showing there is an area of higher concentration that is outside the capture zone of the well. A draft design is underway for two additional extraction wells to meet the goal of 8 pCi/L in 2040. One is to be placed in the heart of the higher concentration section and the other is to be placed downgradient of it. The water will be piped to the existing system that is treating the water currently. The good news is the system is adequately sized and there is no need to expand it.

In summary, Goode said that plume remediation is a dynamic process. They are working with the regulators on a consistent basis. The groundwater monitoring is robust and they have an excellent technical team evaluating the data. Modifications and proposed changes that are recommended are communicated to DOE, the regulator community and the CAC.

Member Shea thanked Goode for the excellent maps.

Member Guthy asked if it was possible to dig up the soil at Building 96, treat it or dispose of it, and how large the area actually is.

Goode said that was one of the options being explored. The area was approximately 200 by 100 feet, and located about 20 to 35 feet below the surface, but it could be worked with. The Lab will be working through the options and discussing them with the regulators.

Member Proios asked if directional drilling techniques could be used with this problem.

Goode said yes.

Member Proios said if you forget about the length and determine the leading edge width, you could do directional drilling and use the well screen to correspond to that leading edge. Then you wouldn't have to worry about dispersing it by putting the single shaft in.

Goode said all options will be on the table but the option will have to be technically feasible and it will have to be shown that it will be effective before it's done.

Member Proios said the whole thing wouldn't have to be permeated because as the plume moves towards you, you would get it right at that point.

Goode said there are remediation systems downgradient of the low permeability area that are effective. The problem is the higher concentrations are locked up in that layer. All options are on the table and will be evaluated.

Reed and the CAC thanked Goode for his presentation.

8. Agenda Setting

Reed asked the CAC for agenda items. Member Jordan Sweet said the conceptual design review for NSLS II would be released either this month or next and suggested that as an item. Member Garber requested a briefing on the funding situation and the continuing resolution. Member Giacomaro asked for the status of the recommendations developed by the CAC on g-2. Member Conklin asked if Dr. Aronson would present at the next meeting. Jeanne confirmed that the Director's presentation on Cosmology was on the agenda for February.

February Agenda
CAC process review
Update on STP tritium sample
Report of findings of Lehman's review of NSLS II
Update on continuing resolution
Feedback on comments recommendations on g-2

Meeting adjourned 9:25 p.m.

Note: After the meeting adjourned, Member Henagan informed Member Conklin and others present that the diagram was a drawing of a Liquid Metal Fast Reactor. It was designed to be a breeder reactor to use sodium for cooling instead of water. It was never used commercially. Member Henagan said it was possible that it represented a model from Brookhaven.

2007 Affiliation		First Name	Last Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Chart Key - P = Present															
ABCO (Garber added on 4/10/02)	Member	Don	Garber	P											
ABCO	Alternate	Doug	Dittko												
Brookhaven Retired Employees Association	Member	Graham	Campbell	P											
Brookhaven Retired Employees Association (L. Jacobson new alternate as of 4/99)(A. Peskin 5/04)	Alternate	Arnie	Peskin												
CHEC (Community Health & Environment Coalition (added 10/04)	Member	Sarah	Anker												
		Ann Marie	Reed												
Citizens Campaign for the Environment	Member	Adrienne	Esposito												
Citizens Campaign for the Environment (Ottney added 4/02-takenoff 1/05 Mahoney put on)(7/06 add Kasey Jacobs)	Alternate	Kasey	Jacobs	P											
E. Yaphank Civic Association	Member	Michael	Giacomaro	P											
E. Yaphank Civic Association (J. Minasi new alternate as of 3/99) (M. Triber 11/05) (Munson 6/06)	Alternate	Brian	Munson												
Educator (changed 7/2006)	Member	Adam	Martin	P											
Educator (B. Martin - 9/01)	Alternate	Bruce	Martin												
Educator (A. Martin new alternate 2/00) (Adam to college 8/01)(add. alternate 9/02) (changed 7/2006)	Alternate	Audrey	Capozzi	P											
Environmental Economic Roundtable (Berger resigned, Proios became member 1/01)	Member	George	Proios	P											
Environmental Economic Roundtable (3/99, L. Snead changed to be alternate for EDF)	Alternate	None	None												
Fire Rescue and Emergency Services	Member	Joe	Williams												
Fire Rescue and Emergency Services	Alternate	Don	Lynch	P											
Fire Rescue and Emergency Services	Alternate	James	McLoughlin												
Friends of Brookhaven (E.Kaplan changed to become member 7/1/01)	Member	Ed	Kaplan												
Friends of Brookhaven (E.Kaplan changed to become member 7/1/01)(Schwartz added 11/18/02)	Alternate	Steve	Schwartz												
Health Care	Member	Jane	Corrarino												
Health Care	Alternate														
Huntington Breast Cancer Coalition	Member	Mary Joan	Shea	P											
Huntington Breast Cancer Coalition	Alternate	Scott	Carlin												
Intl. Brotherhood of Electrical Workers/Local 2230 (S.Krysnak replaced M. Walker 1/11/07)	Member	Scott	Krsnak	P											
IBEW/Local 2230	Alternate	Philip	Pizzo												

2007 Affiliation		First Name	Last Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
L.I. Pine Barrens Society	Member	Richard	Amper												
L.I. Pine Barrens Society (added P. Loris 6/05)	Alternate	Elina	Alayeva	P											
L.I. Pine Barrens Society	Alternate	Susie	Husted												
L.I. Progressive Coalition	Member	David	Sprintzen	P											
L.I. Progressive Coalition	Alternate	None	None												
Lake Panamoka Civic Association (Biss as of 4/02)	Member	Rita	Biss	P											
Lake Panamoka Civic Association (Rita Biss new alternate as of 3/99)	Alternate	Joe	Gibbons												
Long Island Association (Groneman replace 10/05)	Member	Lauren	Hill												
Long Island Association	Alternate	William	Evanzia	P											
Longwood Alliance	Member	Tom	Talbot	P											
Longwood Alliance	Alternate	Kevin	Crowley												
Longwood Central School Dist. (switched 11/02)	Member	Barbara	Henigin	P											
Longwood Central School Dist.	Alternate	Allan	Gerstenlauer												
NEAR	Member	Jean	Mannhaupt												
NEAR (prospect taken off ¾)(Blumer added 10/04	Alternate	Liz	Bowman												
NSLS User	Member	Jean	Jordan-Sweet	P											
NSLS User	Alternate	Peter	Stephens												
Peconic River Sportsmen's Club (added 4/8/04)	Member	John	Hall												
Peconic River Sportsmen's Club	Alternate	Jeff	Schneider												
Ridge Civic Association	Member	Pat	Henagan	P											
Science & Technology (added 1/13/05)	Member	Iqbal	Chaudhry	P											
Town of Brookhaven (Graves made member 6/06)	Member	Anthony	Graves												
Town of Brookhaven	Alternate	None	None												
Town of Brookhaven, Senior Citizens	Member	James	Heil	P											
Town of Brookhaven, Senior Citizens (open slot as of 4/99)	Alternate	None	None												
Town of Riverhead	Member	Robert	Conklin	P											
Town of Riverhead (K. Skinner alternate as of 4/99)	Alternate	Kim	Skinner												
Wading River Civic Association	Member	Helga	Guthy	P											
Wading River Civic Association	Alternate	Sid	Bail												