

## MEMORANDUM FOR RECORD

SUBJECT: Fort Detrick Restoration Advisory Board (RAB) Meeting Summary,  
14 November 2012

**1. Summary Contents**

Items addressed at the meeting are listed below, with corresponding section numbers indicated in the column on the right.

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**Please note: PowerPoint presentations were utilized during the RAB meeting. A copy of the presentations is attached to these minutes and is incorporated into these minutes by this reference.**

## **2. Attendees**

### Members Present:

LTC James St. Angelo, Fort Detrick, Co-Chair  
Dr. Gary Pauly, Community RAB Member, Co-Chair  
Mr. Robert Craig, Chief, Environmental Management Office, Fort Detrick  
Mr. Joseph Gortva, Environmental Restoration Program Manager  
Ms. Elisabeth Green, Maryland Department of the Environment  
Mr. Rolan Clark, Community RAB Member  
Ms. Jennifer Hahn, Community RAB Member  
Ms. Laurie Haines-Eklund, Army Environmental Command  
Mr. Cliff Harbaugh, Community RAB Member  
Ms. Karen Harbaugh, Community RAB Member  
Mr. Barry Kissin, Community RAB Member  
Ms. Helen Miller-Scott, Community RAB Member  
Mr. Rob Thomson, U.S. Environmental Protection Agency, Region III

### Others Present:

Mr. Dwayne Ford, US Army Corps of Engineers  
Mr. William Hudson, U.S. Environmental Protection Agency, Region III  
Mr. Gary Zolyak, Fort Detrick Office of Staff Judge Advocate  
Mr. John Buck, US Army Corps of Engineers  
Mr. Keith Hoddinott, USAPHC  
Mr. Gareth Buckland, Fort Detrick Environmental Office  
Mr. Nicholas Minecci, Fort Detrick Public Affairs Office  
Mr. John Cherry, ARCADIS  
Mr. Tim Llewellyn, ARCADIS  
Ms. Shelly Morris, ARCADIS  
Ms. Katrina Harris, Bridge Consulting Corp.  
Mr. Eli DePaula, Community Observer  
Ms. DeeDee Wood, Community Observer  
Ms. Yvonne Miller, Community Observer  
Mr. George Rudy, Community Observer

### Members Absent:

Mr. Charles Billups, Community RAB Member  
Dr. Henry Erbes, Community RAB Member  
Ms. Alicia Evangelista, Frederick County Health Department  
Mr. Gerald Toomey, Community RAB Member  
Mr. Craig Toussaint, Community RAB Member  
Mr. Thomas Wade, Community RAB Member

## **3. Meeting Opening / Remarks**

Mr. Joe Gortva called the meeting to order. Dr. Gary Pauly welcomed everyone to the meeting and asked everyone to introduce themselves. Mr. Gortva thanked everyone for attending. Mr. Gortva introduced Mr. Dwayne Ford who will be helping to facilitate this meeting, and perhaps

future meetings. Mr. Gortva stated that in the future very technical information will be presented, and that the Army thought it would be a good idea to bring in a facilitator to make sure meetings stay on track and that proper information is getting out to the community and back to the Army. Mr. Ford explained that he had no direct technical involvement with the Fort Detrick restoration advisory program, and that his job as a facilitator is to express no opinions, comments, or suggestions on the presentations, but to keep the meeting on topic and on schedule. He stated that this would allow everyone else to concentrate on the material and discussion without having to worry about the mechanics of running the meeting.

#### **4. Purpose of RAB Meetings** presented by Mr. Dwayne Ford, USACE, Meeting Facilitator

Mr. Ford reviewed the Board's ground rules for the meeting. He asked that everyone silence their cell phones. He stated that Restoration Advisory Boards have narrow, specific charters in dealing with the Installation Restoration Program, which is the purpose of the meeting. He advised that any concerns outside of the Installation Restoration Program can be discussed with the Public Affairs Office to figure out the best venue for talking about the issue. Mr. Ford said that even more specifically there is a detailed agenda for the meeting so any relevant issues not on the agenda can be discussed after the meeting and put on a future agenda.

Mr. Ford stated that Restoration Advisory Boards foster dialogue and two-way communication and video cameras have a way of stopping that so there is no videotaping of the proceedings. He said that the Army does want to hear questions and comments, but that he would like to go through the full presentation, and after the Board members are finished discussing the topic and if there is time before the next topic, that he would take questions from the audience. He noted that there is also time at the end of the agenda for questions and comments from the audience. Mr. Ford advised that the meeting will adjourn at nine o'clock. He explained that he will give a two-minute warning when a topic is approaching its scheduled deadline, but if the Board agrees, they can take time from another portion of the agenda to continue a discussion.

Mr. Ford noted that the Board is co-chaired by a representative from the installation and a community member. He stated that the Board is not a decision-making body, but chartered to provide advice that the installation can use in structuring its environmental restoration program. He explained that the purpose of the Board is to foster regular and sustained communication between the installation, regulators, and stakeholders for the life cycle of a project or as long as there is interest in having a Board. He continued explaining that the Board reviews progress, talks about issues and concerns, and provides advice. Mr. Ford stated that the meeting is open to the public and for Board members it is a working meeting.

#### **5. Meeting Minutes** presented by Mr. Joseph Gortva, Fort Detrick

Mr. Gortva advised that the July 2012 meeting minutes had not yet been distributed, but he anticipated sending them out in the next day or so and to try to finalize them and have them on the web site in the next week.

#### **6. Update on Herbicide Sampling and Archive Search Report** presented by Mr. Joe Gortva, Fort Detrick

Mr. Gortva stated that he wanted to provide a quick update on some activities that have been occurring over the past year and a half. He reminded the Board that as part of the Phase I Archive Search Report, the Army was looking at the historical herbicide testing that occurred at Fort Detrick. He said that one site was identified at Area B where the herbicide 2,4,5-T was tested; he noted that this herbicide is associated with dioxin contamination during the manufacturing process. Mr. Gortva said that Fort Detrick had the Army Public Health Command perform sampling to evaluate the soil and to also determine what is a background level for this herbicide since it is also used by municipalities, farmers, and other entities. He advised that the sampling had been conducted a year ago, but earlier this year the Environmental Protection Agency (EPA) changed its guidance on how to do evaluations of dioxins, and the Public Health Command has been discussing the changes with EPA. He stated that the discussions were concluded about a month ago, and the Public Health Command is scheduled to provide its report in a few weeks. Mr. Gortva said that once the internal review is completed, the draft document will be provided to regulators (EPA and Maryland Department of the Environment) and the Board around the December time frame. He noted that it is a very technical report and there will be a presentation at the next Board meeting.

Mr. Gortva discussed the background of the archive search report noting that records for some of the historical activities at Fort Detrick are no longer stored on the installation. He advised that these records had been taken to national archives in other locations, and Fort Detrick asked the Army Corps of Engineers to review those records to determine if there were any activities that had the potential for environmental hazards or releases to the environment that need to be addressed by the environmental restoration program. Mr. Gortva said that the review of the archives was not limited to Area B, but also included Area A (the main post) and Area C (Fort Detrick's wastewater and water treatment plants). He stated that the Phase I report for herbicides was received in April, and the Phase II report for everything else was received in October 2012. Mr. Gortva said that the Phase II report is 450 pages and contains very detailed information. He advised that it will take some time to determine what needs to be addressed. He also advised that some of the historical program information is still classified as Department of Defense only, so the Army is working on how to get the most substantial information to the regulators and the community. He stated that the release authority is not at Fort Detrick command levels, but at much higher levels within the Army. Mr. Gortva said that he will keep the regulators and the community informed.

Mr. Gortva discussed the next steps to be taken with respect to the archive search report and the herbicide sampling. He stated that the reports will be reviewed and areas identified for further investigation. He noted that sampling plans then would be prepared in conjunction with the regulators and the Board. Mr. Gortva said that data would be collected and evaluated to determine if restoration activities are needed. He estimated that late summer would be the time frame for providing draft sampling plans.

Mr. Barry Kissin stated that the concern about herbicides and review of archives has been important to members of the community concerned about what occurred in the past and whether community members have suffered in the past because of hazards from testing. He said that the Restoration Advisory Board is concerned with current threats to public health or safety and not what has happened in the past, although that is an important topic. He asked if the herbicide

sampling promises or suggests the possibility of illuminating a current threat to public health or safety. Mr. Gortva responded that sampling had been conducted at one site and there is no risk associated with the site as there were no detections of dioxin or herbicides at this one former herbicide site. Mr. Gortva reminded the Board that a previous presentation on the herbicide archive search report showed the amount of 2,4,5-T tested at Fort Detrick was approximately 30 pounds over 30 years compared to a typical farmer in one year using about 50 pounds. He said that based on these numbers, the Army does not anticipate finding any areas of significant contamination; however, the upcoming sampling plans will look at all areas identified by the archive search report as places where herbicide testing occurred to ensure there is no threat to human health or the ecology from these sites today. He stated that Mr. Kissin was correct in that sampling can only measure what is present today, which is what the restoration program addresses.

Mr. Kissin asked if Mr. Gortva would agree that the most fundamental current public health threat to the community is through drinking or contact with water. Mr. Gortva responded that that statement is not necessarily accurate. Mr. Kissin asked what other vehicle would subject the community to a potential health threat. Mr. Gortva said the Army knows there is groundwater contamination at Area B and has tried to determine if anyone is consuming the groundwater downgradient from the site. He said that no one has yet been identified as drinking the groundwater, so if they are not consuming the groundwater, it is not a pathway. Mr. Gortva said that other pathways are being investigated, such as vapor intrusion. Mr. Gortva clarified that vapor intrusion would potentially occur from groundwater contaminated with volatile organic compounds not herbicides. He said that herbicides are not highly water soluble. Mr. Gortva said that the wells and streams around Area B have been sampled for herbicides and ARCADIS will be discussing the results in their presentation later in the meeting. Mr. Kissin said that there is a serious problem with respect to TCE and PCE detections posing a threat to current health and that he does not want to spend time on herbicides if they do not pose a real threat. Mr. Gortva said that he understood Mr. Kissin's comment, but there is restoration program information that needs to be communicated to the community. Mr. Gortva agreed that the primary focus should be on areas which pose the greatest risk, but there are topics which need to be discussed as there are people who are interested in those topics.

#### **7. Off-Post Private Well Investigation** presented by Ms. Shelly Morris, ARCADIS

Ms. Morris reviewed the basis for the study, which is to document any known or potentially unknown drinking water wells surrounding Fort Detrick's Area B and put the information in a comprehensive report. She stated that the second goal is to expand on Fort Detrick's current private drinking water well sampling effort and compile all the previous and current data into one comprehensive data set. Ms. Morris noted that the third goal is to verify that the volatile organic compounds (PCE and TCE) emanating from Area B have not affected private wells in the surrounding community.

Ms. Morris presented a summary of the scope of the project. She stated that there would be extensive public outreach including mailings, newspaper articles, meetings, and in-person contact. She said that the intent of the project is to identify all the private wells through research; she noted that they are also working with the City of Frederick to determine who within

the City may still have a well. Ms. Morris said that the next step will be to obtain permission to access the property, collect samples, analyze the samples for volatile organic compounds, and report the results.

Ms. Morris advised that the study area is approximately 1,300 acres surrounding Area B and that the shape of the study area is based primarily on what is known about the groundwater flow direction, so it extends further to the southeast. She explained that about 2,500 tax parcels were identified in the study area, with approximately 149 parcels in the County area which are not serviced by the public water service. She noted that they are working with the City of Frederick to identify drinking-water sources for parcels within the City limits.

Ms. Morris displayed an aerial photograph and pointed out the boundary of the study area, the existing public water service areas, areas with no access to public water, and areas being phased into public water over the next one to six years.

Ms. Morris reviewed the project timeline noting that an initial mailing was sent on September 28<sup>th</sup> to all the residents in the study area announcing the project and a public information session, which was held on October 16<sup>th</sup>. She advised that the second mailing involved three types of letters being mailed: one to people within the City where information indicates they are connected to public water and not consuming ground water and asking them to advise if that information is/is not correct; a second letter to a few homes within the City, but where information indicates there is a well on their property; and, a third letter to about 150 people within the County area and 14 within the City identified as not having a connection to public water.

Ms. Morris said that a poster/information session was held on October 16<sup>th</sup> with members of the Area B groundwater remedial investigation team present to also help provide information and answer questions. She stated that the session started in the afternoon and continued into the evening with a fairly steady flow of people.

Ms. Morris said that the door-to-door survey had just been completed within the County area and at the few homes in the City. She advised that 135 residences were visited, with some being vacant or the structure no longer existing. Ms. Morris said that more than 80 residents have agreed to have their wells sampled and she anticipates the number will increase slightly. She said that residents who have not yet been reached, and who are believed to have a well, will be sent certified letters to ensure every effort is made to reach all those who might have a well.

A member of the general public asked if a map existed of the wells that were sampled and showing the levels of volatile organic compounds that were detected. Ms. Morris responded that the private properties to be sampled are actually upgradient of the groundwater contamination at Area B so they are not expecting to find contamination. She stated that once the private wells are sampled, the data will be compiled and presented in a way so as to protect the privacy of the homeowners. She noted that the best way to present the data will be determined once the data is analyzed.

Ms. Jennifer Hahn asked that community members of the Board be notified of future public meetings.

Ms. Hahn expressed concern about protecting privacy of homeowners and the potential for a future public health risk if a property is sold in the future. Mr. Gortva said that if the sampling determines that the groundwater plume is different than what is believed, and that if a risk to private individuals is determined to exist, the Army would have to take action and would work with homeowners. He said that the information would then be discussed publicly. Mr. Gortva said that if the sampling does not detect anything, then there are no public health issues.

Mr. Kissin asked if Ms. Morris was satisfied that every door was knocked on and every attempt made to contact those with private wells which might be contaminated by Area B. Ms. Morris responded that she was confident in that multiple attempts were made and information was left behind. She said that they are also researching phone numbers for those who were not at home, and as previously mentioned, certified letters will be sent that residents need to sign to acknowledge receipt.

**8. Area B Groundwater Investigation Update** presented by Mr. Tim Llewellyn, ARCADIS

Mr. Llewellyn advised that good progress continues to be made with the remedial investigation since the last Board meeting. He reviewed the four primary topics he would be covering in his presentation: the progress since the July Board meeting, the conceptual site model, the April 2012 sampling data, and a summary and the next steps.

Mr. Llewellyn advised that in September 2012 another round of groundwater and surface water sampling had been completed in order to have two rounds of data, one from the Spring and one from the Fall. He summarized the surface water sampling results from Carroll Creek presented at the last meeting, noting TCE is being detected below drinking water standards and risk-based concentrations. He said that additional sampling had been conducted further downstream in Carroll Creek, but the data has not yet been validated so that data will be presented at the next meeting.

Mr. Llewellyn continued reviewing recent progress, noting that the Draft Conceptual Site Model Report had been developed and submitted to the Army. He advised that it includes a comprehensive overview of the site conditions, including the nature and extent of contamination and all the validated data from work completed through the April sampling round. He noted that the report will be released to the Board, the public, and the regulators in the near future.

Mr. Llewellyn displayed a list of the major phases of work to be conducted for the Area B groundwater investigation and said that he would be discussing the status of the work, as well as mentioning what has been included in the Conceptual Site Model Report. He stated that in 2011 the existing wells were examined and repaired where needed and that information is in the Conceptual Site Model Report. He noted that the next year was spent putting in new wells and the boring logs, geophysical logs, and other well installation information is also in the Conceptual Site Model. Mr. Llewellyn said that the direct push work, the shallow ground water investigation, which was performed on-site and off-site, is also in the Conceptual Site Model

Report. He noted that the direct push information includes boring logs and validated ground water data. He stated that the information from the survey of Carroll Creek for springs and seeps where ground water may be discharging is documented in the Conceptual Site Model Report. He advised that the data from the sampling of these seeps and springs and the April 2012 data will also be included in the Conceptual Site Model Report.

Mr. Llewellyn reviewed the remaining work to be done under the current work plan, noting that it includes the vapor intrusion sampling and the dye trace study. He said that the dye trace study will verify whether there is some component of contamination going under Carroll Creek and under Area A. He noted that they do not believe this is occurring, but want to perform the dye trace study to confirm.

Mr. Llewellyn next discussed where the project is in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. He explained that CERCLA is the environmental regulation the Army is operating under and showed the five major phases. Mr. Llewellyn advised that the project is currently in the remedial investigation phase which takes a long time at any site, but at complicated sites like Fort Detrick the investigation does take a long time. He explained that the remedial investigation phase is where all the data is collected, wells are installed, samples are collected and analyzed, and site geology is studied. He said that information from the remedial investigation is pulled into a conceptual site model which will be discussed in a few minutes. He said that a future piece of the remedial investigation is pulling all the information into a full risk assessment as required by CERCLA. He said that the project will then move into the Feasibility Study phase where a spectrum of alternatives are assessed and discussed for the issues found at the site. Mr. Llewellyn explained that the next phase is the Proposed Plan, a public document which presents the Army's preferred alternative for a site; this document is put out for a formal public comment period and discussed at a public meeting. He continued explaining that once comments are received and resolved, the remedy is advanced and a Record of Decision is prepared. He noted that the final step is the actual implementation of the remedy.

Mr. Llewellyn said that he would next discuss the conceptual site model.

Mr. Llewellyn showed an aerial photograph of Area B and surrounding roads. He also showed a transect of a portion of the Area B subsurface.

Mr. Llewellyn said that all evidence to date indicates that Landfill B-11 is the principal source of the contamination in the groundwater. He reminded the Board that the Army had performed a surface soil removal in 2004 and put caps over former disposal sites at Area B. Mr. Llewellyn said that the other former disposal sites do not seem to be a significant source of contamination. He said that there are solvents well above drinking water standards in the bedrock below B-11, down to at least 325 feet below ground surface, and probably deeper. He stated that groundwater flows from west to east and goes through the area and picks up the solvents, carrying them through the fractured rock karst aquifer beneath B-11, and discharging them into Carroll Creek and Robinson Spring. He explained that this results in the low levels of solvents seen in Carroll Creek, which are below drinking water standards and risk-based numbers.

Mr. Llewellyn next summarized the April 2012 sampling event. He noted that the Army has collected a significant amount of data in the past, but he would just be discussing the April 2012 data. He reiterated that the Fall results are undergoing validation and he will talk about them at the next meeting.

Mr. Llewellyn displayed a chart showing the chemical groups that samples have been analyzed for and stated that groundwater, sediment, and surface water samples have been analyzed for 216 individual chemicals. He stated that multiplying the number of sample locations by the 216 chemicals has resulted in almost 50,000 data points just from the April 2012 round of sampling.

Mr. Llewellyn reviewed the list of chemical groups and the number of data points. He showed a list of the 216 chemical that the samples are analyzed for. Mr. Llewellyn referenced a question by Ms. Hahn at the previous meeting as to whether atrazine was included in the list, and he noted that it was included.

Mr. Llewellyn said that some thought was put into how to present so much data to the Board. He stated that for his presentation the water data had been compared against established drinking water standards--maximum contaminant levels or MCLs. He explained that these levels are the highest level of a contaminant that is allowed in drinking water and is a Federal enforceable standard. He added that there are not drinking water standards for all chemicals and data for those chemicals was not included in tonight's presentation; generally, the concentrations were very low for those chemicals. He noted that all the information is in the Conceptual Site Model. Mr. Llewellyn said that the sediment data was compared to risk-based screening levels.

Mr. Llewellyn stated that a detailed quantitative risk assessment will be done of all the data as part of the remedial investigation process. He explained that a risk assessment starts with a hazard identification, which takes all the data points and puts them in a risk assessment model to identify the chemicals of concern based on health-based screening criteria. He said that the next step is the exposure assessment which assesses how human and ecological populations could be exposed to the chemicals, such as through drinking water. He noted that since at this time there is no information to indicate anyone is drinking the water, such a scenario would be evaluated as a hypothetical situation. Mr. Llewellyn explained the next step, the toxicity assessment, which puts together the first two elements to assess possible health effects based on toxicity and exposure to the chemicals. He stated that the risk assessment concludes with the risk characterization steps which develops a quantitative assessment of site-related risks and identifies key chemicals of concern.

Mr. Llewellyn stated that risk assessments are EPA mandated and the reports are prepared under close EPA oversight. Mr. Llewellyn provided an EPA web site address ([http://www.epa.gov/oswer/riskassessment/risk\\_superfund.htm](http://www.epa.gov/oswer/riskassessment/risk_superfund.htm)) where more information could be found on risk assessments.

Mr. Llewellyn repeated that solvents are the main contaminant and are present in the groundwater at the part per million (ppm) level in the vicinity of B-11. Mr. Llewellyn advised that 39 chemicals were detected in the monitoring wells installed by the Army, 10 were above their respective drinking water standards, and TCE was the most commonly detected chemical.

He noted that in residential wells no chemicals were detected above the drinking water standard, and that no site-related contaminants were detected. He explained that MTBE (a gasoline additive) was detected in one well in April 2012, but no MTBE has been detected in groundwater at Area B. Mr. Llewellyn displayed a chart showing the volatile organic compounds detected in groundwater above the maximum contaminant level. He noted that TCE was detected in 35 wells and three piezometers with the highest concentration detected being 15,000 parts per billion compared to a standard of 5 parts per billion. He displayed an aerial photograph of Area B showing the TCE exceedances in groundwater at Area B. Mr. Llewellyn said that PCE was detected in 18 wells and two piezometers. He pointed out that the highest concentrations of volatile organic compounds were all detected at the B-11 landfill, while the impermeable covers at the other disposal areas seem to be preventing any significant contamination to the groundwater.

Mr. Llewellyn next discussed the semi-volatile organic compounds detected in groundwater. He stated that 22 compounds had been detected underneath Area B, with two compounds detected above their respective drinking water standards—1,2,4-trichlorobenzene in three wells at B-11 and pentachlorophenol in one well at North (77). Mr. Llewellyn displayed an aerial photograph showing the location of the semi-volatile organic compound exceedances at Area B.

Mr. Llewellyn next discussed the metals sampling results. He explained that when samples are analyzed for metals, they are done as total metals and dissolved metals; he said that this is also known as filtered and unfiltered metals. He explained that unfiltered samples could have sediments, pieces of mud, or clay floating around in the sample which could have metals in them. He continued explaining that a sample is also taken from the same well and filtered in the field and that those results are reported as the dissolved metals. He noted that no metals were detected above drinking water standards in the filtered/dissolved samples. He said that for the total metals, arsenic and lead were detected above drinking water standards in two and seven wells respectively. Mr. Llewellyn clarified that multiple metals were detected which are naturally occurring. Mr. Llewellyn showed an aerial photograph with the locations of the metal samples above drinking water standards in groundwater at Area B.

Mr. Llewellyn summarized the April 2012 sampling results by stating that no PCBs were detected, and herbicides and pesticides were detected in groundwater at concentrations near the detection limit, but none above drinking water standards. He explained that the lab analyzed for dioxins at the parts per trillion level so it is possible to see very low concentrations, and two detections were found near B-11 at those very low concentrations, but not above drinking water standards. Mr. Llewellyn said that the analysis for radiologicals found no exceedances of gross alpha and two exceedances of gross beta at B-11.

Mr. Llewellyn next discussed the seep and surface water sampling results. He stated that in the springs and seeps 10 volatile organic compounds were detected with only TCE detected above the drinking water standard. He said that in surface water nine volatile organic compounds were detected with only TCE detected above the drinking water standard. He advised that the two surface water locations were near the center of Area B in Carroll Creek at 11 parts per billion and 5.5 parts per billion at Robinson Pond. Mr. Llewellyn showed aerial photographs of where TCE was found in the seeps and springs and surface water.

Mr. Llewellyn summarized the Carroll Creek volatile organic compound sampling data, noting that the detections are below drinking water standards, below human health screening criteria for recreational use, and below human health screening criteria for ingestion of fish. He said that Carroll Creek is not used as a drinking water source.

Mr. Llewellyn summarized the metals sampling results, noting that 20 metals were detected in seeps and springs as is expected with naturally occurring elements, with only one metal (lead) detected above the drinking water standard at two locations, but only in the unfiltered samples. He showed an aerial map depicting the lead detections in seeps and springs.

Mr. Llewellyn summarized the April 2012 sampling results for seeps and springs by stating that four semi-volatile organic compounds were detected near the detection limit, but none above drinking water standards and that PCBs and pesticides were not detected.

Mr. Llewellyn summarized the April 2012 sampling results for surface water noting that four semi-volatile organic compounds were detected near the detection limit, but none above drinking water standards, that PCBs were not detected, and that one pesticide was detected, but not above drinking water standards.

Mr. Llewellyn next discussed the sediment sampling results, noting that sediment refers to the saturated mud at the bottom of ponds and streams. He displayed an aerial photograph showing the 34 sediment sampling locations along Carroll Creek and Stream No. 2. Mr. Llewellyn explained that, since there are no drinking water standards for sediment, the results were screened against regional screening levels which are risk-based concentrations developed by EPA. He noted that they were a screening tool and not cleanup standards. He provided an excerpt from EPA's guidance document noting that that chemical concentrations above the regional screening levels do not designate a site as "dirty" or trigger a response action, but that exceeding a regional screening level suggests that further evaluation of the potential risks by site contaminants is appropriate. He also provided the EPA web site for more information.

Mr. Llewellyn advised that seven volatile organic compounds were detected in sediments with TCE detected most frequently at 10 of the 34 sample locations; none of the TCE detections were above the regional screening level. Mr. Llewellyn displayed a map showing the locations where TCE was detected in sediments and stated the maximum detections were on-site at Area B.

Mr. Llewellyn stated that 19 semi-volatile organic compounds were detected in sediments with three compounds detected above regional screening levels. Mr. Llewellyn displayed a map showing the locations where the semi-volatile organic compounds were detected. He stated that the data seems to indicate there does not seem to be a significant problem with semi-volatile organic compounds in the groundwater, but all the data is being looked at in greater detail. Mr. Gortva added that semi-volatile organic compounds are also associated with asphalt, so asphalt areas close to streams may be the source, and Mr. Llewellyn agreed.

Mr. Llewellyn next discussed the results from the analysis for metals in sediments. He stated that multiple metals were detected in sediment as expected with naturally occurring elements.

He noted that the samples showed low concentrations widespread throughout the area and unlikely to be related to activities at Area B. He advised that arsenic, manganese, and thallium exceeded regional screening levels and will be integrated into the risk assessment process.

Mr. Llewellyn summarized the sediment sampling results by stating that PCBs were not detected above screening levels, two pesticides were detected above screening levels, and no dioxins or herbicides were detected above screening levels.

Mr. Llewellyn referred back to the Area B Conceptual Site Model and summarized the data and information collected to date. He said that there are solvents in the groundwater beneath B-11, with concentrations above drinking water standards acting as a continuing source, flushing through the karst system aquifer, and discharging up into Carroll Creek. Mr. Llewellyn said that the data seems to indicate all the groundwater is discharging into Carroll Creek, but one of the remaining data needs is to confirm this is what is happening through the dye trace studies.

Mr. Llewellyn discussed the balance of the work remaining under the current work plan. He stated that they are still working on getting access to the Waverly property to install wells at depth and collect groundwater from the fractures to understand what is going on in that area at depth. He noted that the developer installed and sampled relatively shallow wells (60 to 100 feet deep) in 2002 and did not find any solvent contamination, but the contamination could be deeper.

Mr. Llewellyn noted the vapor intrusion sampling is scheduled for the coming winter months during the heating season. He displayed an aerial photograph showing the location of the five buildings scheduled for the vapor intrusion assessment to ensure there are no TCE or PCE vapors accumulating under those buildings slabs and finding their way through the buildings. He explained that a hole would be drilled in the slab and samples taken in the hole and in the air space. Mr. Llewellyn said that he expected the work to be done in the next month or two so data may be available at the next meeting. Mr. Gortva added that vapor intrusion is a new focus for the regulators and that there is some confusion in how the assessment should be performed. He continued explaining that there can be other sources in a building, such as clothes just having been dry cleaned, which will show a spike in perchloroethylene. He stated that there is a fair amount of effort needed prior to the assessment to remove other sources, which may be in the building. LTC St. Angelo asked if all the rights of entry had been obtained for the buildings to be included in the assessment, and Mr. Llewellyn confirmed that all the forms had been received. In response to a question from Ms. Hahn about the lines depicting the TCE and PCE plumes on the aerial photograph, Mr. Llewellyn said the lines are estimated and will be updated soon. Mr. Gortva noted that the lateral and vertical extent of the contamination needs to be considered as vapor intrusion only results when there is contamination relatively near the surface, and that guidance calls for an assessment to be done when buildings are within 100 feet of a plume having concentrations of five parts per billion or greater at the surface. He added that these guidelines do not indicate there is a problem, but only trigger the need for an assessment.

Mr. Gortva asked Mr. Llewellyn to address the question of whether contamination is expected west of Area B. Mr. Llewellyn said that water is flowing from the mountains so there is significant hydraulic head causing it to flow downhill from left to right (West to East). He stated that private residential wells which have been sampled, although at shallower depths, have not

shown any detections for volatile organic compounds. Mr. Gortva added that 20 or so residential locations west of Area B have been sampled over the last 10 years and that there has been no detection of TCE or PCE or any site-related contamination to the west of Area B or upgradient with one exception. He stated that there had been one detection around 2005 that was below drinking water standards, but it had never been detected again. He explained that is why they are looking at connecting these homes along the border to municipal water supplies to be as protective as possible.

Ms. Hahn asked about the impact of recent heavy rains. Mr. Llewellyn said that the potential for impact from heavy rains had been examined and what is generally seen in karst environments is minimal variability in the groundwater system.

## **9. RAB Member Open Discussion**

Mr. Kissin expressed his concern that information has not been obtained yet on what is happening with deep groundwater flow off-post. Mr. Llewellyn said that was a question being addressed by the current work in that deep wells were installed at 325 feet below ground surface. He stated that fewer open fractures are seen as one goes deeper with most of the fractured rock seen in the upper 150 feet or so, and thus most of the groundwater circulation occurring at this depth. He noted that based on the data received from these deep wells, the need to investigate at even deeper depths is being discussed. Mr. Kissin asked how many of the current monitoring wells were at least 325 feet deep, and Mr. Llewellyn responded that that 8 or 10 are at least 200 feet or deeper. Mr. John Cherry added that borings were done to determine if there was groundwater encountered at depth and whether solvents were encountered. He said that deep well locations were then based on the results from the borings and put in where the highest concentrations of solvents were encountered. Mr. Llewellyn noted that the current work plan was developed to address many questions that existed several years ago, and that while there are still questions, many of the data needs have been addressed by the recent work and many questions from three years ago have been answered.

Mr. Kissin said that there is deep groundwater contamination right at the boundary and that it is not possible to say that it does not extend onto the Waverly property. He stated that the reason the site was put on the National Priorities List was to characterize the groundwater, including the deep groundwater. Mr. Robert Craig stated that ARCADIS is performing the work developed in the work plan that took more than two years to negotiate with the USEPA, and ARCADIS is doing the work the regulators thought was appropriate. He said that the work has resulted in information that was not previously known. Mr. Craig noted that the deep wells recently installed are the deepest wells every drilled on Fort Detrick. Mr. Craig agreed with Mr. Kissin's comment that information is needed about the Waverly property. Mr. Craig said that ARCADIS will be presenting, very soon, to the Army and regulators the conceptual site model developed under the current work plan which will identify where the Army needs to go next.

Mr. Kissin said that he had done some legal research, and Section 104 of CERCLA gives the Army authority to issue access orders. Mr. Gary Zolyak said that he would be glad to receive a copy of the research Mr. Kissin had performed. Mr. Zolyak said that the Army does not have authority to issue access orders on any property, but has responsibility to follow the Federal

Facilities Agreement signed with the USEPA, which states the Army will take reasonable efforts to try and gain access to properties. Mr. Zolyak said that while the Army does not have legal authority to go onto private property or issue access orders, EPA does have that authority. Mr. Zolyak said that the Army needs to discuss with EPA whether they have the ability to issue access orders in this case.

Mr. Rob Thompson asked if given the TCE concentrations seen at B-11 did ARCADIS expect to find DNAPL in the groundwater and, if so, did they expect DNAPL flow to mimic the plume or move in a different direction. Mr. Llewellyn responded that the Army has seen DNAPL in the past, but ARCADIS did not see it during the recent work. Mr. Llewellyn explained that DNAPLs are dense non-aqueous phase liquids and are the solvents at high enough concentrations that they are not dissolved in the groundwater. Mr. Llewellyn said that he did not think the DNAPL is moving with the groundwater flow as in fractured systems they tend to sink since they are heavier than water and not migrate laterally. Mr. Llewellyn said that there is a good amount of fracturing in the rock beneath B-11.

Ms. Hahn followed up on a comment by Mr. Kissin about seeing at what depths contamination was found and suggested perhaps using transparencies over the map. Mr. Craig responded that this can be done with computer graphics, and Mr. Llewellyn said he would provide such a presentation at the next meeting.

In response to questions, Mr. Llewellyn discussed how the groundwater flow is documented through sampling, geology, and water level measurements. He explained that groundwater flows downhill. He said that wells were drilled at 325 feet deep and water level measurements taken from the well at the head of that water. He said if, for example, the water level was 100 feet above sea level, the water would flow in a direction that was less than 100 feet, thus moving downhill. He said that if another well had an elevation of 110 feet, the groundwater would not flow in that direction. Mr. Llewellyn said that groundwater can flow uphill for short distances in fractured rock but generally flows downhill.

Mr. Kissin asked if in the future the focus of the presentations could be on what has not been done as opposed to what has been done. Ms. Laurie Haines-Eklund said three years ago wells had only been installed to a depth of 180 feet where contamination was detected. She said that all the stakeholders agreed to install additional wells to a depth of 325 feet and thus 29 borings were recently done across the site with some going down to 325 feet. She said that work resulted in finding contamination at 325 feet, and based on that data, there is now a need to go deeper. She stated that there is a contract in place to put in additional deep wells, but the exact locations need to be discussed within the Army, the EPA, and the State. Mr. Kissin asked at the next meeting specific plans be presented to sample at 325 feet and deeper to fully characterize the groundwater.

Mr. Cherry said that an important aspect is whether or not anyone is being exposed to contamination regardless of the depth. He said that the residential wells closest to the boundary are not impacted, and the Army is in the process of sampling another 80 private wells around Area B. He reiterated Mr. Gortva's earlier comment that there have been no detections of solvents to date above drinking water standards in nearby private wells. He said that while there

is additional work to be done to further investigate deep groundwater, there is a much better understanding of where the groundwater is discharging and the flow direction.

Mr. Kissin said that he had visited homes on Kemp Lane about four years ago, and one resident said she had all kinds of cancer and was still drinking well water. Mr. Craig responded that all homes on Kemp Lane were being sampled, and Mr. Kissin commented that it was being done many years after the Army was aware of the contamination.

## **10. General Community Comments**

A member of the general public commended the Army and ARCADIS on the recent environmental work and the reporting. He asked if any further consideration or action had been taken with respect to banning fishing or posting in Carroll Creek. Mr. Craig responded that the Army had met with representatives from the City and the public health department and presented the Army's findings. He said that the City did not want to take any action as the detections are below drinking water standards. Mr. Zolyak said that it is a question of risk, and the City determined there was insufficient risk to the public to cause the need for action.

A member of the general public stated that he had recently moved to the area and was impressed with the technical information presented. He asked if it is possible to start a groundwater remediation action while additional studies are completed. Mr. Craig responded that more than \$30 million has been spent on interim actions, such as the landfill caps and hooking up homes to public water, as well as the \$24 million removal action. He said that he has begun to discuss the possibility of an interim action at the source area while studies continue.

Mr. Gortva reminded all present that there are open seats on the Board for additional community members and applications are available. He encouraged anyone interested to fill out an application. Mr. Gortva asked Dr. Pauly if he would reach out to community members who have not attended meetings for some time and determine their interest in remaining members, and Dr. Pauly agreed to contact them.

## **11. Next Meeting**

Mr. Gortva suggested the following dates for 2013: February 6<sup>th</sup>, May 8<sup>th</sup>, August 7<sup>th</sup>, and November 6<sup>th</sup>. The Board agreed to the next meeting date of February 6.

Mr. Gortva noted that documents will be sent to the Board before the next meeting on CDs or by providing a link to an FTP site by email; the Board members agreed to have documents sent through the FTP site. Mr. Gortva said that as the Board members review the documents, they can email him with requests for certain information to be discussed at the next meeting.

The Board members discussed whether there would be a need to have a meeting sooner than May, and the Board agreed to wait until the February meeting to see if there was a need to have a meeting in March. The Board tentatively set March 6 as the date if a meeting is needed. LTC St. Angelo suggested the community members meet separately as allowed by the Board's charter or funnel their suggestions for future presentations to Dr. Pauly, as the community co-chair, so that all the community members' needs can be met.

The meeting adjourned at approximately 9:10 p.m.

Reviewed by:

Approved/Disapproved

Enclosures:

Fort Detrick Installation Restoration Program Area B Groundwater Investigation Update  
Meeting Sign-In Sheet

**DISTRIBUTION:**

Each RAB Member (w/o enclosure)

Each Meeting Attendee (w/o enclosure)