Former Badger Army Ammunition Plant
Restoration Advisory Board (RAB) Meeting Minutes

January 16, 2025

Time: 6:00 PM

Place: Conducted in-person at The River Arts Center, 105 Ninth Street, Prairie du Sac, Wisconsin 53578, streamed live and captured through Sauk-Prairie Indy YouTube channel https://www.youtube.com/@SaukPrairieIndy and also live virtually using Microsoft Teams.

Attendees:

In Person RAB members: Michele Hopp (RAB Community Co-Chair, Village of Merrimac), Luke Lampo (Wisconsin Department of Natural Resources), Jeremiah Yee (Wisconsin Department of Health Services), Randy Poelma (Ho-Chunk Nation), Dr. Dennis Hancock (US Dairy Forage Center), Michael Gleason (Lake Wisconsin Alliance), Adam Weiss (Town of Prairie du Sac), Doug Gjertson (Town of Sumpter), William Stehling (Village of Sauk City), Issac Ross (WDNR), Scott Benson (U.S. Army Environmental Command – USAEC), Chris Hanson (at large member).

In person attendees: Mark Frey (videographer), Joel Janssen (Army Contractor, SpecPro), Quang Nguyen (USAEC), Cathryn Kropp (USAEC), James Ashley (Army Contractor, Cherokee Federal), Caludia Freed, Donna Poquette, Jack Poquette, Dennis Linley, Ron Lutz II (Sauk Prairie Conservation Alliance), Mike Mossman (Badger History Group), Madeline Heim, Curt Meine (Sauk Prairie Conservation Alliance), Nick Corson-Dosch (U.S. Geological Survey - USGS), Brian Hardy, Meg Haserodt (USGS), Mallory Lindstrom, Jeff Gust, Seth Reedy (U.S. Army Corp of Engineers), Brian Jacobs (SpecPro), Kendra Saunders (SpecPro), Paul Graham (SpecPro).

Virtually: Laura Olah (RAB Member, Citizens for Safe Water Around Badger), Morgan Salli (Office of Congressman Pocan), Lisa Wilson, Matthew Pajerowski (USGS), Jelena Banks (Army Contractor, SpecPro), Lisa Hartman, Joe Block (Star News).

Welcome and Opening Remarks, including notes on Public Questions and Comments (Quang Nguyen):

Quang Nguyen, USAEC Team Lead for the Midwest and Central America Division introduced himself together with Scott Benson, USAEC Environmental Support Manager and RAB Army Co-Chair, and Cathy Kropp, Environmental PA Specialist with USAEC.

Quang thanked all present for their attendance, interest, support, and the dedication of RAB members, and then outlined a limited agenda for the evening: Following the public open house earlier in the evening, that structure consists of 1) the RAB meeting itself, where the Army's proposed plan for sitewide groundwater remediation for the former BAAP will be presented, similar to the remedial investigation and feasibility study presented by Mr. Mike Kelly of the Pentagon in 2019. That meeting is available on YouTube at the Prairie-Sauk Indy channel: https://www.youtube.com/@SaukPrairieIndy. There will be opportunities during the presentation for 2) questions, which can receive live responses, and following the meeting for 3) formal oral or written comments, which are received in a 'listening only' mode without responses. The public comment period is considered separate from the quarterly RAB Meeting. Written comments can be submitted in person at the meeting or emailed until Feb. 28, 2025. Attendees are asked to indicate their intentions to present a comment (oral or written) on the sign-in sheets. There is no reason to submit both written and oral comments; either type is fine. The public comment period officially started Dec. 16, 2024 and it will end Feb. 28, 2025, which is more than the standard 30 day public comment period requirement. Comments will be documented officially when drafting the Record of Decision.

Quang outlined the process for questions during the RAB meeting and comments during the oral public comments session, which begins once the RAB meeting is adjourned.

Cathy asked that participants hold their questions until the presenter breaks for that input, underscoring that the RAB meeting is the time for questions, not comments. Comments on the Proposed Plan will be heard following the RAB meeting during the public oral comment portion of the evening. New people were introduced; hydrogeologist James Ashley with Cherokee-Federal on a contract to support USAEC, and Scott Benson, who is the new Environmental Support Manager with USAEC. Quang adds that Scott is a RAB Co-Chair and has replaced Laura Powell, and that Quang himself will continue to support the RAB and BAAP cleanup operations and remains available if anyone has any questions.

There were no comments on the October 2024 meeting minutes, and they will be finalized and placed on the public website. Future Badger RAB meetings were listed as Apr. 17, July 17, Oct. 16, and Jan. 15, 2026. Quang reminded the RAB members that a form was circulated on Jan. 2 by Cherokee Federal to update RAB membership and requested they be filled out and returned at the earliest convenience if that has not already been done.

Quang acknowledged that the RAB members have requested a Technical Assistance for Public Participation (TAPP) to assist them with understanding and reviewing the Gruber's Grove Bay Feasibility Study that the Army is currently preparing. The Army will initiate that process and request a waiver since the maximum allowable amount has

been reached. Upon approval by HQDA, the Army will work with RAB Community Co-Chair Michele Hopp to prepare the application.

Michele Hopp announced that RAB member Mary Carol Solum passed away. She noted there has been interest expressed in having an informal meeting of community RAB members to go over plans and help each other formulate written comments. Michele will circulate an e-mail and set something up if there is enough interest.

The meeting presentation was circulated in advance of this meeting to RAB membership, and will be available on the Army's website (https://aec.army.mil/baap/rab) and on YouTube (https://www.youtube.com/@SaukPrairieIndy).

Joel Janssen explained that SpecPro Professional Services, LLC is the Army's onsite remediation contractor handling characterization, monitoring and remediation planning. BAAP land use history covering active manufacturing during World War II, Vietnam, and Korean Wars was reviewed. Dinitrotoluene isomers (DNT) were used in the propellant manufacturing process and are the main contaminants of concern (COCs) in the groundwater. Carbon tetrachloride (CTET), ethyl ether, trichloroethylene (TCE), and a few others are present as well. Land has been transferred to USDA Dairy Forage Research Center, Wisconsin Department of Natural Resources (WDNR), Wisconsin Department of Transportation, Ho-Chunk Nation, and Bluffview Sanitary District.

Joel explained the four plume outlines plotted in visuals are based on 2023 data (June 2024 data shows very similar results) and emphasized that their boundaries are determined by the Wisconsin Preventive Action Limit (PAL), which should be interpreted as a state level of concern for monitoring purposes. The Enforcement Standard (ES) is different and represented by the drinking water numbers, which are exceeded by CTET (5 ppb), ethyl ether (1,000 ppb), total DNT (0.05 ppb), and TCE (5 ppb) within the Propellant Burning Ground Plume (PGB) and DNT within the Deterrent Burning Ground (DBG), Central, and Nitrocellulose plumes. In addition, there is a small amount of sulfate exceedance above the enforcement standard (250 ppm) from Landfill 5 within the DBG Plume, but it is limited. These plumes are color-coded in the figures to clarify separation between PAL and ES, and sampling cadences are summarized for each plume in the presentation.

Questions and Answers

Q: In the Central Plume that shows DNT, there are some VOCs (e.g., chloroform) that show up at the PAL level near the Water's Edge community where several wells were replaced. Why doesn't that show up on the map? Even though you haven't identified a source, it doesn't mean it isn't there.

A: While there are chloroform detections down in the Water's Edge, none of the detections have been found above the ES, and a chloroform source area has not been

found upgradient, so it doesn't lend itself to plume delineation. All of the residential wells are tested for volatile organics, which includes chloroform, plus DNT to monitor whether there is a situation. We're not sure if the chloroform is from the same source zone as the DNT.

Q: Could it be marked on the side of the map that it was detected?

A: So far we're aware of its occurrence only in that one area near the Water's Edge, but we can consider adding it in future iterations of the figure.

Q: The three or four wells that have been replaced in the last 20 years, what was exceeded there that caused their replacement and how long ago?

A: It was 2,4-DNT and 2,6-DNT. There have been three wells replaced near Water's Edge.

Q: What was the reason for the more recent well; was it better or deeper?

A: Joel. All the wells that have been replaced were screened at similar depths in the sand. The last replacement well was screened within bedrock.

Army response actions to reduce exposure risk have included 1) soil remediation (excavation hauled to on-site landfill, bioremediation, and soil vapor extraction) and capping; 2) pump-and-treat groundwater interim remedial action for the PBG Plume; 3) residential well replacement (one within DBG Plume, three within the Central Plume, and three within the PBG Plume); and 4) Land Use Controls (site access, excavation, impermeable membranes, and groundwater use restrictions). The groundwater interim remedial measure (IRM) started in 1990 at the PBG, and then in the mid 1990s the groundwater modified interim remedial measure (MIRM) was started. Both groundwater remedial systems were shut down by 2016 with WDNR approval with system and well removal. This was pumping groundwater from the sand and gravel within the PBG Plume.

The CERCLA process was reviewed for orientation on process status. We are currently in Step 4 – soliciting public comments on a proposed plan. Step 3 (Feasibility Study of Remedy Alternatives) was conducted in 2021. The next step will be the Record of Decision, which will reiterate the proposed plan with a summary of all RAB and public input. There was a similar action during the Remedial Investigation/Feasibility Study in 2021 with a RAB/public input summary that also included WDNR input. The Record of Decision gets signed by the U.S. Army after considering all public input, authorizing progression to the next step. Bench and laboratory testing will then be conducted to identify final remedial system designs. Groundwater monitoring will continue throughout the process.

Background slides summarized CERCLA-only environmental restoration history of BAAP starting in 1980 and (omitting any State/RCRA actions) leading to the updated Human Health Risk Assessment (HHRA) of 2023 and the 2024 Proposed Plan. This is followed by the Calculated Risk Summary chart outlining the cumulative cancer risks, non-hazard cancer indices, and COCs for each plume. The numbers are further broken out into on-site and off-site risk cases, both hypothetical and current, and exceedances are presented in bold text.

The groundwater remedial action objectives is standard CERCLA language to protect human health, prevent exposure to the contaminated groundwater, and restore the groundwater aquifer (wherever that may be – on or off site) to beneficial use, and then minimize the contaminated groundwater on any of the environmental factors. Those objectives are achieved when risk-based COCs are below their respective cleanup levels using either the EPA maximum contaminant levels, or WNDR Enforcement Standards (e.g., for DNT). The risk assessment does not drive cleanup but rather establishes that the Army can proceed with cleanup, which is driven by the regulated action levels.

Plume-specific remedial alternatives are presented, including the selected option of in-situ anaerobic bioremediation. EPA's nine criteria for CERCLA evaluation of the remedial alternatives are presented. An evaluation of the alternatives for each plume is presented across the next four slides based on several criteria including cost, effectiveness and implementability, and rating them with a High, Medium or Low preference index. The higher preferences are for corrective actions that actually treat the plumes to below Enforcement Standards as permanent solutions, not methods that work simply as reactions when exceedances are encountered. Further details are available in the presentation/slide deck.

Questions and Answers

Q: Randy Poelma (Ho-Chunk Nation). Those were 2021 cost estimates. How do you feel about those costs today?

A: Joel. There is always going to be an increase; those were the best estimates available at the time, but they will have to be revised. These costs are just used for evaluation, and we don't anticipate they would be actual costs.

Q: Laura Olah (Citizens for Safe Water Around Badger; attending virtually). As you know the DNR has submitted at least three formal comment letters on the proposed plan for site-wide groundwater, and has participated in countless meetings with the Army. Could you explain which recommendations relative to risk have been rejected by the Army pertaining to known or potential carcinogens?

A: Quang. The main recommendations that DNR provided and that we did not agree with would be in how we calculated risk. We are using the EPA risk-based, CERCLA policies to identify what risk we have based on a 10^{-4} to 10^{-6} acceptable *range* whereas DNR uses their state regulations, which dictate that all groundwater has to be risked at 10^{-6}. That is the main disagreement with that particular item. It pertains to all plumes, but in the end the risk drives the needed action. And in this case, regardless of whether we go with 10^{-4} or 10^{-6}, the Army is still proposing actions for three of the four plumes. The disagreement is that our risk analysis identifies site-specific COCs, whereas the DNR value would add more COCs to the list. But since any hypothetical COCs would be in the same family with known COCs, the proposed Army remedy would address them anyway.

Q: Laura. It sounds like the Army will not comply with groundwater enforcement standards for the State of Wisconsin. Is that true?

A: Quang. Not for risk calculations, but when we get to the actual remedy as Joel mentioned on the remedial action objectives, we will be cleaning up to the state enforcement standards.

A: Joel. Yes, for the Central, the DBG and PBG Plumes.

Q: Laura. I have the timeline here actually provided by the DNR: “In 2024 the Army submitted revised draft proposed plan for site-wide groundwater. The Army states it will not accept DNR’s 2024 comments and this version of the proposed plan will be released for public comment.” In 2020 there was recommendations specific to the Nitrocellulose plume and the COCs were not identified. I maintain that the Army does not intend to comply with groundwater enforcement standards that the rest of us have to comply with. Based on the position that the Army wants to follow CERCLA for example the Army wants to clean up to a different standard onsite rather than offsite. State law requires that all groundwater everywhere in the state comply with groundwater standards.

Q: Dr. Dennis Hancock (US Dairy Forage Center). I have a series of questions for clarity. First question is what's the half-life of DNT?

A: Joel. All six isomers act very differently. The degradation of 2,4 and 2,6-DNT is going to be much faster than the other 4 isomers. I do not know that there's been an official calculated half-life. It's just not a compound that's studied like that. I think people have tried to do laboratory studies to do that but I'm not aware of anything that I could put my finger on.

Q: Dennis. So it’s probably safe to assume it’s a pretty long half-life?

A: Joel. If you look at the longevity of how long the contamination has been detected at some of the Badger locations and how persistent it's maintained within the plume, and you could make your own nonscientific conclusion. Since the 70s there hasn't been any release of any contamination at the site.

Q: Dennis. Is the alternate water supply you're talking about a running water line?

A: Joel. No this is not a water system. The Army either provides bottled water or drills a new well as an alternate water supply.

Q: Dennis. Was the idea of drilling a pipeline supplying community water ruled out?

A: Joel. Yes. It didn't actually clean up the site.

Q: Dennis. So essentially what we're saying is that Alternative 2 is not really feasible?

A: Joel. Yes; it only prevents people from drinking the water but it doesn't actually remediate the groundwater.

Q: Michael Gleason (Lake Wisconsin Alliance) to Issac Ross (WDNR): Does the DNR have anything to say about the Army not living up to what the state requires?

A: Issac. Yes; we've been in discussion with the Army like Laura mentioned a number of times -- I know we have three written comments that we provided to the Army, and then during the public comment period we also provide additional comments to that aspect so it's a disagreement certainly, but I don't think that the conversation's over by any means from our standpoint, and that's why I would continue to try to bring the Army back to the table and provide these written comments too.

The preferred alternative for each of the plumes is Alternative 4, In-situ Anaerobic Bioremediation, which is an active technology used widely with chlorinated solvent plumes nationwide. Examples for the remedy’s use include explosive COC sites in Nebraska and Texas, which are provided as case studies. EVO has been used at Cornhusker Army Ammunition Plant to treat RDX and TNT. EVO has been used at Hawthorne Army Depot to treat RDX. EVO has been used at Pantex Plant (Superfund site) to treat 2,4-DNT, 2,6-DNT, HMX, RDX and TNT. The remedy uses a nutrient-enriched, emulsified vegetable oil (EVO) injection technology, which will be introduced to the subsurface through both existing and numerous temporary wells. Above-ground structures (tanker trucks, containers, etc.) will be visible only during periods of active treatment. Our drilling is typically to depths over 100 feet which is labor intensive and expensive compared to that of shallow drilling, and cost estimates take this into account. The technology does change the groundwater environment within the treatment zone from its current oxygenated (aerobic) state to a deoxygenated (anerobic) state so the anerobic bacteria can metabolize the COCs. Injected water may

be mixed with water pumped from a nearby well, but the feasibility and need for this will have to be assessed. Both the COC destruction and evaluation of destruction progress through groundwater monitoring will require time. The EVO is vegetable grade and includes a surfactant to change surface tension and encourage biodegradation at soil grain surfaces where COCs are present within the treatment zones. The radius of influence at each well location will likely be limited, so that is also something that requires monitoring.

The Interstate Technology & Regulatory Council evaluates remedial technologies and provides guidance for their use including bench and pilot test options with other design considerations, which will be explored here during the design phase. A remedial system like that proposed requires a much deeper understanding of site conditions, groundwater behavior and contaminant reactions during treatment, some of which cannot be learned until operation is underway, which could end up modifying system engineering requirements to improve performance. It is significantly more involved than a simple excavation, for example. Graphics depicting each of the plumes with preliminary injection locations were shared. Treatment will address the full plume thicknesses (ranging from 55 to 100 feet) within their respective enforcement zones.

Q: Non-RAB attendee. How much smaller was the Central Plume in 2023 than it was in 2021?

A: Joel. The Central Plume did extend to the plant boundary before. Some offsite wells did have small DNT exceedances above Enforcement Standards, but we haven't seen those exceedances recently. An old well was removed from an offsite property when it was replaced with a new well.

Next steps include 1) completing the public comment period on the proposed plan, 2) considering and responding to public comments, 3) preparing and submitting the Record of Decision, and 4) conducting the Remedial Action, including design, construction, operation, and reporting, none of which is scheduled for the current year. The Army will need to get the Record of Decision signed by the Pentagon first before funding can be authorized.

Questions and Answers

Q: William Stehling: When you start the phase one and end the phase three how many years are you talking, five years?

A: Joel. That is possible, because you might also be responding to something you learned about one place or plume that you would then want to apply somewhere else to improve efficiency.

Q: William. When do you start the first drill?

A: Joel. You will first drill for the bench scale testing and lab analysis.

Q: William. 2026 maybe?

A: Joel. That is possible, yes. Then possibly another year before going out to begin installation. We also have to respond to a WDNR injecting permit requirement.

Q: William. What is the budget for the whole project?

A: Joel. There are just the estimates. There is no budget planned yet.

A: Cathy: We haven't developed a Record of Decision yet. We are in the Public Comment period, which doesn't end until the end of February, and then we have to prepare the Record of Decision and Responsiveness Summary, and then we have to coordinate it through the Pentagon, and then we go to WDNR for their comments, and we go back and forth between WDNR and the Army. It takes quite a bit of time. But once we have the Record of Decision saying what we're going to do, we can then set the budget and see how much money is available. Funding varies from year to year.

Q: William. So we don't know really when we start and when we end?

A: Cathy. Not right now, no. Because we haven't yet designed what we're going to do. We're still in the early stages so no we don't really know when we will start and when we will finish.

Q: William. And you've got to get the money every year?

A: Cathy. Exactly.

Q: William. You have to apply each year for funding?

A: Cathy. Yes; funding only lasts one year.

Q: Chris Hanson: To follow along on this issue of the timeline, you said that this has been done in other areas, so extrapolating from those experiences, I would think that you should be able to apply at least a gross timeline for bench testing, pilot study, and getting to the point of full implementation. To me five years is probably optimistic, quite honestly. I think we're looking at 10, maybe 15 years at least in this. I guess I would like to see that in the document. But when you get to full implementation there's some other issues that I didn't see in the document and I haven't heard discussed. One of those is a lot of that land, unless you reserve the right to go and do this in the land transfer document, you got to go back and get service agreements with the USDA and the Wisconsin DNR. And I looked this afternoon at Wisconsin DNR's master plan for this area and this was not envisioned. So is the DNR going to have to go back and revisit that master plan? That's a couple of year process right there.

A: Joel. The Army has covenants within the transfer documents that allow them to remediate if necessary.

Q: Chris. We're talking very intense array of wells here.

A: Joel. Yes.

Q: Chris. So the impact on the ground is going to be significant it's going to change the nature of the Sauk Prairie Recreation Area of some of those areas. It's going to change for Dennis Hancock (USDA) some of those field areas are going to be out of production. So because these are federal tax dollars going into this (i.e., federal resources) we're looking at another NEPA document to analyze those impacts. So before you can spend the federal dollars, you've got to be able to document and publicly disclose to the decision maker those impacts. So when you build all that in – I assume you've done this for other areas – why can't you give us some kind of gross sense of what we're talking about?

A: Joel. So some of these sites that I mentioned they are still injecting and they started 10 years ago. They're reinjecting and they're finding that maybe their contamination was too high in the beginning or they were doing a much smaller injection. They were doing walls or tighter spacing. So that's probably very different because it's much more cost prohibitive initially to just come up with that many millions of dollars up front. So there's a lot of people that are injecting the EVO again and again every so many years and they're sort of cycling through a different area. So they're doing a part of an area and then they're going to a different part of a plume several years later instead of trying to do it all within a couple of years. So the original estimation was if the Army was going spend as much money as they could within a few years to accomplish maximum proficiency. That may not be realistic in the real world.

Comment: Chris. I don't want people to leave thinking the Army is going to take Alternative 4 and in a few years it's all going to be cleaned up. We're talking still probably a couple of decades. Very likely 20 years. The point is there are a lot of variables here. There are more unknowns than knowns.

A: Joel. We'll know more once the remedial design phase is done. I think that will be the key. There must be contractors willing to perform the work, vendors that are going to be able to supply all the right products at the right time. This is a very important part of it. So Dennis' concern with the land we think about constantly because we have a lot of monitoring wells already on USDA property and so heavy consideration has to be thought about of when you do it how you impact crop rate growth, where you can limit disturbances. It's definitely something that has to be thought of immediately with anything to do with their property.

Q: William. Will this be year round or only when it's warm enough to use the wells?

A: Joel. There are times where you can. It depends. You have to make sure the temperature is right for the product, but there are other ways to get around it but you probably wouldn't want to do it when it was 0 degrees, so there might be some limitations because it's going to be less pumpable material. Yeah, there's definitely a lot of factors with our weather situation than maybe other sites. Texas doesn't have any issue usually with some of these sites that I'm mentioning with the weather patterns being that cold.

Q: Dennis: What is the impact on vegetation after all this has taken place?

A: Joel. It would just be the equipment that's going in and out. The injection will be taking place down to the ~100 foot depth.

Q: Chris: With respect to vegetable oil itself, do anerobic bacteria use that as a substrate that they live on and ultimately eats that up?

A: Joel. It only lasts for maybe two years and then you're going to consume everything within that zone. Some places have found less some have had more than two years of availability but that's a good consumption rate to think about. It's a carbon substrate. It's going to take time within that anaerobic reaction for it to rebound to maybe the aerobic environment that it was used to. You're going to be monitoring it to make sure of that.

Q: Chris. Did I miss this in the plan – is there at least some subjective comparative analysis in the plan that gives a tax payer a reasonable assurance that this will be successful? Like a bench test if you would we've got a lot of core samples from these formations and we have a pretty good idea of what the lithology is there. And you know what it was at Cornhusker and other areas. Is there any comparative analysis that was done that I missed?

A: Joel. No, there was no documentation of other sites or that kind of feedback specifically about the soil type or anything. There was no written part of that so you didn't miss it if that's what you're looking for. We've talked to vendors that are injecting the product. The vendor that I've talked to has supplied product to all three of these explosive sites in the past (in Nebraska and Texas) and so they also evaluate what kind of vegetable oil what's the makeup that works better with your soil type and looks at all of your groundwater characteristics to see what kind of product mixture works best. They have many different types of blends that work in different environments so definitely something that is more thought about once you actually go ahead.

Q: Chris. There are a number of statements in the plan that say that it will degrade it will take care of VOCs and so forth, but there's no analysis to support that. So for the vendors and so forth you've talked to, is the lithology that we've got in this formation of 100 to 150 feet within the range of the lithologies that they've already worked with?

A: Joel. Yes, when I talked to the vendor about the sand that we have, he recommended different kinds of products that they've had success with, including chlorinated solvent sites. And looking at your porosity you know how fast does water move – it was very important to him trying to figure out what product would last the longest thinking about how fast our groundwater moves and they've had other sites that move much faster than ours and so they were looking at what type of oil product blend would be best for that kind of situation. Yes they've seen a lot of different types of sites and this is just the one vendor that I talked to recently. There are numerous vendors out there that are doing vegetable oil type products.

Q: Non-RAB attendee. Sorry, I haven't been to a meeting in a while, and there was talk about dredging Gruber's Grove Bay?

A: Joel. Yes, there are other projects that will be addressed at the next meeting. This meeting had a limited agenda.

Q: William. When you start treating with the wells, drilling the wells and starting the flow of your ingredient into the well, do you start at the end of the plume or the start of the plume? I realize that the plume may be moving so if you start at the end of the plume we'll have to go back to see where the end of the plume is.

A: Joel. My concept and what most people would consider is you want to start in the more highly contaminated zone because you want to see what is the worst area that your treatment can affect, and look at the most reduction that you can do for the cost.

Q: William. So you're not treating the whole plume; you're going to start with the worst contamination?

A: Joel. It would depend on what kind of contractual document the Army can come up with for how much work can be done within a year or two years. What is the viability of doing all of that with what the USDA is talking about with how that affects the land. There will be time of year considerations, etc. We do that with sampling too as we try to accommodate when crops are going in and we try to wait as much as we can. So I'm sure the same situation would be thought through while trying to remediate.

Q: Dennis. What about horizontal drilling?

A: Joel. We did consider horizontal quite a bit. We talked to some vendors specifically about drilling underneath the PBG that has a liner on top that we do not want to penetrate. The liner is very good at restricting the groundwater. We were trying to evaluate what would happen if you tried to horizontal drill beneath the PBG. You do have to go out very far to get to that 100 foot depth with a horizontal drilling machine. Your end pipe and outlet pipe can go really far out. For instance, we would have to be out in the farm field to the west in the USDA research area. We'd have to be out there

with the drilling machine or the exit piping and then you would insert a pipe into the ground that you could then possibly pump your chemical mix into. The engineer and I tried to figure that out. It was ultimately not kept in the design that is in the Proposed Plan. That's not saying that we couldn't revisit that option.

Q: Dennis. Seems to me that you could be more descriptive of where you would have that land impact with horizontal drilling. Perhaps it's adjacent to the east of the DBG, in an area that's not farmland and that's not heavily used as a recreational area, but still provides access to the site of interest.

A: Joel. Right. The cost can get pretty high for one horizontal boring. I don't recall what those costs would be. It is much more expensive than vertical drilling, but you're looking at something that you want to always have permanently in the ground if you're going to ever reinject again because this could be another couple $100,000. It is a lot more work with the distance that they have to drill horizontally to reach the groundwater.

Q: Dennis. I'm just trying to make the point that you have to sacrifice/mess up an area and do the damage there to avoid having 2,000 of the 7,000 acres impacted.

A: Joel. I'd say we definitely want to keep you involved with whatever is going on with and through the design to see what we can do.

Q: Dennis. Where those drill points are going to be is probably in 500 to 1,200 acres of farmland.

A: Joel. Yeah, there's a lot of the PBG Plume that is in that farmland up on the moraine.

Cathy. These are the kinds of comments that we need to have submitted; things we need to consider.

Dennis will submit a written comment.

Q: Non-RAB attendee. Does this proposed plan and decision change the well monitoring you're doing right now?

A: Joel. The Proposed Plan will not affect the current testing.

Q: Non-RAB attendee. Are there proposed changes to wells that you are currently testing?

A: Joel. There are going to be some proposed changes. We are going to submit a report to the DNR this year about changing some of the monitoring. Mostly it's going to be a base document of what is in the monitoring plan and will be going forward. The DNR asked for that specifically, and then it can be changed if needed. Once the monitoring plan is complete, the Army will provide that information in a future RAB meeting.

Cathy: And if you're on our mailing list you'll get it by e-mail. If you're not on the e-mail list and you want to be please give us your information back at the desk and we'll make sure you get that information.

Q: Chris: Are the current monitoring and testing costs included in the numbers that were showing up in those alternatives?

A: Joel. Yes; all of the monitoring costs would be included for each of those alternatives. We had to forecast out the monitoring costs, and the best way is to use your existing costs as a basis.

Laura Olah submitted the following in writing, but also requested that it be read into the record during the RAB meeting. This will be considered a written comment for the Proposed Plan and included in the responsiveness summary.

Comment: Laura Olah, Citizens for Safe Water Around Badger. I saw a letter in November 2024 which clearly states that while DNR utilizes a 10^{-6} cancer risk threshold for all groundwater, the Army is not utilizing those requirements to determine risk. Therefore, the Army is not remediating all contaminants of concern for sites with groundwater within the boundary of the former Badger Army Ammunition Plant. The Army said this is the only comment received from DNR for the Proposed Plan and the plan will be considered final, and we will move to public comment. I am submitting this resolution and have asked that paper copies be handed out at the meeting. This resolution has been signed by some members of the Badger Restoration Advisory Board. Other RAB members are invited to add their names by contacting me by email or phone.

RESOLUTION by Members of the Badger Restoration Advisory Board (RAB) Supporting U.S. Army Compliance with WI Groundwater Standards and WDNR Directives at and near Badger Army Ammunition Plant

January 16, 2025

WHEREAS, the U.S. Army Environmental Command has informed the Wisconsin Department of Natural Resources (WDNR) that it will NOT comply with the State's enforceable groundwater standards for certain cancer-causing chemicals that have migrated to groundwater, and

WHEREAS, for decades, contamination from the former 7,400-acre Badger Army Ammunition Plant has been moving offsite and now poses a threat to as many as 300 residential drinking water wells in rural Sauk County, and

WHEREAS, the WDNR has issued at least three formal letters (June 2023, October of 2023 and again in October 2024) to the U.S. Army calling for compliance with state groundwater standards, and

WHEREAS, the Army is pursuing a level of cleanup that is 100 times LESS protective of human health (1x10-4) for the Badger lands, and

WHEREAS, the purpose of the Badger Restoration Advisory Board is to serve as an avenue for communications between the installation, state and federal officials, and the community about the environmental restoration activities at the former Badger Army Ammunition Plant,

THEREFORE we, the under-signed members of the Badger Restoration Advisory Board, call on Wisconsin Governor Tony Evers to act to assure that the Department of Defense fully complies with state environmental rules and regulations and act to protect the health and sustainability of Wisconsin's groundwater at Badger Army Ammunition Plant and throughout the state.

SIGNED:

Laura Olah, Citizens for Safe Water Around Badger (CSWAB)

Charlie Wilhelm, At Large member

Kendall Lins, At Large member

Bill Stehling, Sauk City

Mike Gleason, Lake Wisconsin Alliance

Doug Gjertson, Town of Sumpter

Chris Hanson, Member-at-Large

Michele Hopp, Village of Merrimac

The RAB meeting was adjourned at 7:53 PM.