PORTSMOUTH SITE ADVISORY BOARD

U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL MANAGEMENT SITE-SPECIFIC ADVISORY BOARD

PUBLIC MEETING MINUTES

September 17, 2024

1862 Shyville Road

Room 160

Piketon, OH 45661

LIST OF ACRONYMS

ASER – Annual Site Environmental Report
D&D – Deactivation & Decommissioning
DDFO – Deputy Designated Federal Officer
DOE – U.S. Department of Energy
EM – (DOE) Office of Environmental Management
EM SSAB – Environmental Management Site-Specific Advisory

EPA- Environmental Protection Agency
ETAS – Enterprise Technical Assistance Services
FACA – Federal Advisory Committee Act
FY – Fiscal Year
HQ – Headquarters

Portsmouth – (DOE) Portsmouth Site
PORTS SSAB – Portsmouth Site-Specific Advisory Board
PPPO –Portsmouth/Paducah Project Office
SSAB – Site-Specific Advisory Board

Appendix

PARTICIPANTS

Site-Specific Advisory Board: **Jody Crabtree,** chair; **John Hemming**, Board Member; **Lisa Pfeifer**, Board Member; **Sam Brady**, Board Member; **Donna Carson**, Board Member. **Bryan Davis**, Board Member; **Wayne Mclaughlin**, Board Member; **Beth Workman**, Board Member. **Julie Galloway**, Staff; **Cindy Lewis**, Staff; **Eric Roberts**, Meeting Facilitator

Absent: **Herman Potter**, Vice-Chair; **Randy Evans**, Board Member; **Matt Setters**, Board Member

U.S. Department of Energy: **Greg Simonton**, Federal Coordinator

Department of Energy Contractors: **Shawn Jordan**, Fluor-BWXT Portsmouth (FBP); **Melissa Green**, Enterprise Technical Assistance Services (ETAS)

Board Liaisons: **Sean Kubera**, Ohio Department of Health (ODH); **Grace Stutler**, Ohio Environmental Protection Agency (OEPA); **Harry Kallipolitis**, Ohio Environmental Protection Agency (OEPA)

Public: **Vina Colley**, PRESS/NUWS; **Gina Doyle**, Don't Dump on US; **Pat Marida**, Ohio Nuclear Free Network; **Kevin Shoemaker**, SODI; **Joe Manchik**, Green Party; **Lee Blackburn**, **Diana Cahall**, **Larry Swain**, **Gwen Mason**, **Eric O'Neil**, **Shawna Houston**

MEETING MINUTES

The U.S. Department of Energy (DOE) Environmental Management (EM) Portsmouth Site-Specific Advisory Board (PORTS SSAB) meeting was in Piketon, Ohio and virtually via YouTube. Participants included EM SSAB leadership, support staff, DOE contractors, and the public. The meeting was open to the public and conducted in accordance with the requirements of the Federal Advisory Committee Act (FACA).

Recordings of this meeting can be viewed on YouTube at the following link:

https://www.youtube.com/results?search_query=portsmouth+site+specific+advisory+board

Opening Remarks
Mr. Jody Crabtree opened the meeting at 6:00 p.m.
Mr. Eric Roberts contractor supports the Portsmouth/Paducah Project Office (PPPO) and meeting facilitator, welcomed attendees and reviewed the ground rules and logistics of the meeting. All board members introduced themselves.

Agenda
Mr. Roberts asked board members for any changes or alterations needed to the agenda. Seeing none.

Deputy Designated Federal Officer Presentation/Federal Project Coordinator Comments
Mr. Greg Simonton, Federal Project Coordinator of the Portsmouth Site-Specific Advisory Board, stated we have a few videos. We are going to show you one, an overview of the site, and we will show you where to find the other one, which is about the internships we have had this summer. We wanted to have a couple of interns here to talk, but they are all back in school now. These interns have played a crucial role in the expansion of our program over the 15-20 years, from a handful to dozens at each site. We have had several that went on to full-time employment.
Mr. Eric Roberts shared the impressive growth of our internship program. He stated, "I think the first year was 18-20, something like that. This year, with Portsmouth, Paducah, Lexington, DOE, and FBP, we have a total of about ninety-four interns." This significant increase in the number of interns is a clear indicator of the program's positive impact and the opportunities it provides.

Liaison Comments
Mr. Sean Kubera, Ohio Department of Health (ODH), said he had no comments.
Mr. Harry Kallipolitis, Ohio Environmental Protection Agency (OEPA) said he had no comments.
Ms. Grace Stutler, Ohio Environmental Protection Agency (OPEA), said she had no comments.
Administrative Issues

National EM SSAB Chairs Recommendation on maintaining and keeping documents related to board activities in perpetuity. Please refer to the Appendix 1

Mr. Eric Roberts stated that since this is a national chair's recommendation, we cannot change anything, so we vote thumbs up or thumbs down.
Mr. Jody Crabtree stated that what drives this is the talk about not keeping these records. If that happens, new board members would not have easy access to the board records. All the boards decided to recommend keeping these records accessible to everyone.
Mr. Wayne Mclaughlin stated I am making a motion to accept the recommendation.
Mr. Bryan Davis stated that I seconded the motion to accept the recommendation.
Mr. Eric Roberts asked if there was any more discussion. I see none. We will be open to public comments directly on this recommendation only.

Public Comments on National EM SSAB Chairs Recommendation
Mr. Lee Blackburn said I would like to stress the significance of the recommendation I am about to make. It is crucial that you read the recommendation yourself paragraph to educate and inform future board members, interested community groups, and the public in general. We are committed to maintaining a detailed archive of board activities that is easily accessible from the website. I visited the website yesterday in search of all the information from the July 25 meeting and found only one page. There were no minutes, and this is a violation of the Federal Advisory Committee.
Mr. Eric Roberts stated the ***Motion carried*** *(8 approved, 0 opposed, 0 abstained, 0 recused)*

Rec 24-01 Priorities for Site Budget: Please refer to Appendix 2
Mr. Jody Crabtree stated this one of the most significant recommendations we have made. The site takes decades to clean up, so we wanted to reinforce everything we talked about before and address stuff for the future. We talked about inflation adjustment planning; we are a budget-oriented site, so we do not want to slow down the process. I think it is one of the best recommendations we have made.
Mr. Sam Brady said I am new to the board, but I will indeed celebrate the process of developing these recommendations. My input was welcomed, and I tried to catch a broad census from the working group. I will speak from page two under recommendation concerning the funding decision for southern Ohio's JEDISO economic development mission. It has been a very successful program and working group that came out of the community commitment plan and was structured by BWXT for the current contract. We have done many things at the site and throughout the region. I will send you the updated numbers. But the recommendation reflects the 4-county investment.
Mr. Eric Roberts said that if you choose to follow this recommendation, we will obtain updated numbers from Sam and adjust them according to the recommendation.

Mr. John Hemmings stated I would just add that this was not just a five-minute meeting. We talked about it at several meetings. I do not want anyone to think it was a quick decision. We thoroughly worked on it.
Ms. Donna Carson said I appreciate the effort put into this recommendation. I realized I was away from the country for some time.
Ms. Lisa Pfeifer: I am making a motion to accept the recommendation.
Ms. Beth Workman: I second the motion to accept the recommendation.
Eric Roberts Asked if there was any further discussion. I see none. We will be open to public comments solely on this recommendation

Public Comments on Recommendation 24-01
Ms. Pat Marida stated I will read you an article I wrote about Radioactive metals and recycling. At that time, I sent it to the Department of Energy Secretary Bill Richardson in 2001, and he put a moratorium on recycling radioactive metals. This decision was crucial for our community, as we did not want radioactive materials, and not only that, but if that happened, the value of recycled metals would have tanked. A feasible study of a dedicated steel mill facility was completed by the DOE shortly after that moratorium was put into effect. They projected $ 855 million to 2.9 billion dollars for a metal recycling facility. I will tell you a little bit about what happened here at Piketon. It says they were recommending a RAD metals smelter here. The DOE has been promoting building a radioactive smelter here at Piketon since 2009. Initially, they asked a subcommittee of the Site-Specific Advisory Board to recommend a smelter to the entire advisory board, which voted in May 2010 to recommend a smelter. This is one of the hundreds of examples of how DOE manipulates citizens and public processes at Piketon. A more recent example is the PORTS Future Project, built as an independent study of the Voinovich School of Ohio University to be given 500 thousand dollars, yes ½ million dollars, to gather the opinions of residents in the four countries surrounding the Piketon site on what they would like to see in the Future for the site. The town meeting, open to the public, put the recommendation on the back burner. PORTS Future conducted an online survey and recommended a nuclear power plant. The study was finished in 2011, and the results were posted on the PORTS Future website. In 2012, a smelter that was never discussed in the study appeared on the PORTS Future website as a recommended facility. When contacted by the Siera Club study leadership, they said they would remove the smelter from the website but had no idea how it got there. This lack of transparency is just one example of how the DOE extends its way over so-called independent studies that they so happen to command. That is still happening; they are saying a nuclear power plant was recommended when that was not the result. And not only that but who is going to be here? I would not think that a clean energy place would want to come here to work when it is well known to have nuclear radioactive activity around. You will get the dirtiest kinds of things coming here, including a generation of more radioactivity of the same type. There is also talk about recycling nuclear waste here; now, that has happened already because during most of the

time this plant has been operating, they brought in over a dozen names that I have a record for, but it was recycled high-level nuclear waste.

Ms. Vina Colley said I have concerns about the plant. I noticed that you have recommended a converter, and I am wondering how the recommendation considers the fact that the nickel plant, which was buried here in 1979, is still on-site. This plant was contaminated with Plutonium, Neptunium, and Americium, which were sent there for reprocessing from Piketon, Paducah, and Oak Ridge. I am worried that the nickel being used might already be processed and contaminated with these substances, and I am unsure about the recipients of the nickel. The reprocessing of reactor fuel has been ongoing since 1974, and this was kept secret from the workers and the community, resulting in many workers falling ill. Compensation was paid to sick workers, but I remain concerned about the health and safety of the workforce and the community, especially considering that the plant is located downwind.

Ms. Diana Cahall said I recently received an email from DOE Nuclear Energy. They announced that they will be funding a program through the national lab. One of the key points in their announcement is the construction of two micro-reactors on the SODI land, which has been transferred. They are collaborating with BWXT contractors at the Idaho National Lab for recycling. The Idaho National Lab has a significant amount of spent nuclear fuel and used fuel rods from military reactors producing plutonium for nuclear weapons. The program is aimed at recycling this material, and it seems that two nuclear reactors will be placed on SODI's transferred land in Piketon.

Mr. Eric Roberts said, "That was news to me." Can you forward that email? Thank you. Are there any more board comments on the recommendation? Let’s vote with the one addendum with the numbers from Sam. All votes favor passing recommendation 24-01 with the edit, so please raise your hand. ***Motion carried*** *(8 approved, 0 opposed, 0 abstained, 0 recused)*

Rec 24-02 Continued Environmental Monitoring Communications, Please refer to Appendix 3

Mr. Eric Roberts emphasized the crucial role of environmental data monitoring, particularly in the context of DOE's X-326 demolition. He stressed the need for providing as accurate and comprehensive environmental data as possible to the community.

Mr. Jody Crabtree mentioned that, based on this board's and stakeholders' recommendations, there has been a significant effort to conduct air monitoring. Although the exact number is unknown, approximately six new air monitors have been installed. It is essential to highlight the success of this initiative and express our satisfaction with the effort. Moving forward, it is crucial to continue monitoring the current building and future ones.

Ms. Beth Workman asked Sean why it wasn't done everywhere.

Mr. Sean Kubera responded, "I have no idea. I believe it should be done everywhere. It is my personal opinion."

Mr. Sam Brady stated that we are obtaining similar results among the three due to the following reasons.
Mr. Sean Kubera responded 99.9% of the time, which is nearly perfect. If we don't achieve similar results, we convene to investigate.
Mr. Bryan Davis raised a crucial question about funding, inquiring whether it adequately covers all necessary monitoring. He suggested that if the current funding is insufficient, it should be increased to ensure comprehensive coverage.
Mr. Eric Roberts said, "That's a good question."
Mr. Greg Simonton responded, "You're suggesting keeping the appropriate amount of funding in this one area of the DOE to ensure adequate funding for comparable data."
Mr. Bryan Davis emphasized the necessity of maintaining funding for the project, assuring the audience its future success.
Mr. Wayne McLaughlin said, "I motion to accept the recommendation as amended."
Ms. Beth Workman stated I second the motion to accept the recommendation.
Mr. Eric Roberts emphasized the importance of public comments, stating that we value and encourage the input of the community. He invited further discussion and public comments specifically on this recommendation, reinforcing the audience's role in the decision-making process.

Public Comments on Recommendation 24-02
Ms. Diana Cahall mentioned that, according to a GAO report from 18 months to two years ago, the demolition of x-326 was completed well ahead of schedule and 20 million dollars under budget. As a result, the DOE rewarded the contractor with an 18-million-dollar bonus. It was suggested that the funding could potentially be used to shrink-wrap X-333 to prevent pollutants from entering the air. Therefore, if someone were to request the same funding for X-333, they would subtract 20 million dollars and ask for the total funding to shrink-wrap it. This is important because everyone's children breathe the air, so any effort to keep pollutants out of it would be beneficial.

Ms. Pat Marida said I want to second what Diana said about covering the building. Other sites have been covered. Sadly, the Zahns Corner Middle School Dr. Kettling said one of the biggest problems is not that the school itself is contaminated but that the children were there as this demolition was going on and breathing this air, and that’s when we got exposed to the materials that were in the air. It’s essential to do that, and it’s not too late to have the other buildings covered. A ditch around the building does not capture all the things that come out of the building, all the overflow, all the rain, etc. Much good monitoring must be done to ensure those things don’t get into the environment. These other sites have been covered; Piketon seems to be the poor stepchild.

Mr. Lee Blackburn stated that the X-326 building is likely one of the most contaminated buildings in the country, with 95% enriched uranium. However, it was demolished without any

proper covering. There is a video online showing a tarp on the building flapping in the wind because it wasn't adequately covered, and it likely spread contamination throughout the community. I have not personally reviewed the data**.**

Ms. Vina Colley stated that she agrees with everything that was said. She is seeking clarification on whether the recommendation was written by the Department of Energy (DOE) or the board. She also wants to know how many studies were conducted on the nickel plant and which organizations were involved in the testing. She believes that only the DOE conducted the testing and is concerned about the potential for contamination if the project moves forward. She mentioned seeing contaminated dust in a video and highlighted the risks associated with truck drivers backing up to landfill dumps**.**

Mr. Eric Roberts mentioned that he would take it as an action item and try to find out.

Ms. Gina Doyle asked about the procedures for decontaminating the trucks going in and out. She mentioned a truck sitting in Piketon from TFE and another one in the back parking lot of a specific location in Piketon. Ms. Doyle expressed concerns that the trucks might not be getting cleaned properly and the roads aren't being watered down or sprayed with something when trucks go off-site. She wants to know if the trucks are being cleaned to prevent further contamination. Additionally, she mentioned a specific truck parked behind the candle company in Piketon, covered with dust, and questioned TFE's actions.

Mr. Eric Roberts assured; I will see what I can find for you.

Board Comments on Recommendation 24-02
Ms. Beth Workman inquired about the decision not to wrap the building and asked who made that decision.
Mr. Greg Simonton stated that not all buildings are shrink-wrapped.
Mr. Eric Roberts said, I can get you an answer. How do you want to proceed? Do you want to vote? Are you good? Okay, all those in favor of passing recommendation 24-02, please raise your hand.
Motion carried *(7 approved, 0 opposed, 1 abstained, 0 recused)*

Election of Chair and Vice Chair
Mr. Eric Roberts asked if anyone wanted to nominate someone.
Mr. Jody Crabtree suggested nominating Donna Carson as Chair and Herman Potter as Vice-chair.
Mr. Eric Roberts asked Is anyone else interested? If not, everyone is in favor of Donna Carson serving as chair and Herman Potter as Vice Chair, with Jody Crabtree showing Donna the ropes.
Motion carried *(8 approved, 0 opposed, 0 abstained, 0 recused)*

Work Plan 2024-2025: Please refer to Appendix 4.
Mr. Eric Roberts presented the work plan for 2024-2025.
Mr. Bryan. Davis asked can we bring this up at the next meeting to see if we want to add anything?"
Mr. Eric Roberts confirmed his agreement. Are you all fine with voting tonight? If needed, we can make additions. Is there anyone who would like to propose accepting the work plan for 2024-2025?
Mr. Sam Brady stated that I had motioned to accept the work plan for 2024-2025.
Mr. Bryan Davis stated I second the motion to accept the work plan.
Motion carried *(8 approved, 0 opposed, 0 abstained, 0 recused)*

Executive Subcommittee
Mr. Eric Roberts announced that ballots would be distributed, with everyone's name on them. Please circle three names for the Executive Subcommittee. Donna Carson, Herman Potter, and Jody Crabtree will also be serving, and we need three more members. Please circle and submit the ballot. Is there anyone who would not like to serve? Beth Workman and Bryan Davis requested to have their names removed. After counting the ballots, we will have Sam Brady, John Hemmings, and Lisa Pfeifer.

Public Comments
Ms. Lori Swain expressed her concerns about the SSAB meeting cancellations over the past year. She requested a commitment from the board to ensure that the meetings take place in the future. Previously, the meetings were held on Thursdays, but now they are scheduled for Tuesdays. Ms. Swain asked to be informed of any changes. She also raised the issue of meeting cancellations due to lack of quorum and suggested addressing membership issues to prevent this from happening. Additionally, she mentioned Lee Blackburn's dissatisfaction with the minutes posted on the website. She praised the excellent recommendation that emerged from the National Chairs Meeting.

Ms. Shawna Houston shared that she has lived in her current location for 46 ½ years. The photo depicts her son Ena and Grant during Easter in April 2015. Just two weeks after the joyful Easter celebration, Grant was actively participating in baseball tryouts when he was diagnosed with leukemia and a tumor behind his right eye on April 24, 2015. The doctors informed Ms. Houston that Grant had only a few weeks to live. When she inquired about the possible genetic cause, she was told that it was likely due to environmental factors rather than genetics. Grant bravely battled the illness, undergoing five rounds of chemotherapy and 44 radiation treatments. Unfortunately, he passed away in March 2016. Grant was known for his infectious smile, his love for sports, and his adventurous nature, always playing outdoors in the creek and dirt. Ms. Houston can't help but question whether his exposure to contaminants in the environment played

a role in his illness. She wonders if her son would still be alive today if he hadn't been exposed to environmental contamination.

Ms. Vina Colley expressed her concern that at our last meeting, she requested the EPA and Health Department to put signs in Little Beaver Creek, Big Beaver Creek, and the Scioto River, but she never received a response. Many people have been questioning the purpose of the advisory board, as they ask questions but never receive written answers. The advisory board responds to the community and then provides answers, but Ms. Colley emphasizes the need for written responses. She insists that the creeks are contaminated until signs are posted. Ms. Colley also mentioned that the fish in the creek have been found to be radioactive after being tested by the EPA, and she recalls a time when technetium, uranium, and neptunium were dumped into the creek after cleaning out cells. She urges for the signs to be posted.

Ms. Pat Marida has some questions. Firstly, are the committees meetings? There used to be four committees - are any of these still meeting? Can the public find out about them and attend? Do we know when they are? Additionally, some are interested in SODI meetings. Can that information be posted on the SSAB website as well? Also, can we attend the executive meetings or have them recorded? I understand it's more of a planning meeting. They are discussing recycling, which involves using radioactive waste. This could potentially lead to the creation of a waste dump for recycling purposes. It's concerning that the amount of radioactive waste hasn't decreased; instead, it's being reused, and this recycled material is used to make weapons. These weapons could potentially end up in the hands of other countries.

Mr. Eric Roberts mentioned that all our meetings will now take place here on the third Tuesday. We won't have any subcommittee meetings. I can inquire about the SODI meeting, but we don't have control over the website; I can forward the information to them. The Executive meetings are private, and we don't discuss anything that couldn't be public.

Mr. Lee Blackburn made four points during his statement. Firstly, he emphasized the importance of having the minutes, work plan, and recommendations posted on site, and expressed frustration when the recommendations were not available for review. He also requested that the information be distributed to all board members. Secondly, he highlighted the U.S. Department of Energy's $18.9 Million Financial Assistance Grant Award and expressed concern over the treatment of Portsmouth in comparison to other locations. Thirdly, he mentioned a study by Dr. Micheal Ketter of Northern Arizona University regarding neptunium 237 in Little and Big Beaver Creek, emphasizing the potential health risks associated with the elevated levels of neptunium in the area. Lastly, he discussed the historical uranium enrichment at the site and the potential future developments, including plans for reprocessing and fuel fabrication, as well as the military's involvement in purifying uranium for weapons.

Mr. Joe Manchik stated a Freetime Green Party candidate for the US House of Representatives, believes that most people in Ohio are against the use of Nuclear Energy due to its environmental impact. He asserts that the use of mini-nuclear power plants in the United States has led to toxic radioactive fallout, contaminating the environment. He points to the Fukushima power plant disaster as evidence of the widespread contamination caused by nuclear energy. Mr. Manchik and the Green Party consider the production of nuclear energy to be criminal activity. They also oppose the use of depleted uranium in missiles, citing its contribution to toxic radioactive fallout in Iraq and Afghanistan. Mr. Manchik advocates the adoption of solar and wind power technologies to make nuclear energy and fossil fuels obsolete. He encourages support for Dr. Jill Stein, the Green Party candidate for President of The United States.

Ms. Gina Doyle inquired about the schedule for the Southern Ohio Company to take over. She wanted to know if a new company is coming in to start the clean-up and if any contaminated material has been brought onto the site for disposal. She was concerned about how the material is being transported, whether by train or truck, especially since the train passes down the highway several times a day. She also expressed worry about the dusty coal on the trains causing a blackout and raised concerns about the lack of testing for transuranic and outfalls by the Department of Energy (DOE). She also discussed the placement of air monitors and questioned whether any testing had been done to determine the prevalence of cancer in those areas, particularly in Otway near the school. She mentioned that one street in Scioto County had seventeen people with cancer and expressed worries about the impact on children, especially those being taught about nuclear activities. She was concerned that children taking tours of the plant might be at risk of developing cancer, similar to the workers, and questioned the potential consequences if a student were to develop cancer after visiting the plant.

Final Comments from the Board: None

Next board meeting November 19, 2024

Donna Carson closed the meeting at 8:11 p.m.

Appendix 1

ENVIRONMENTAL MANAGEMENT SITE-SPECIFIC ADVISORY BOARD

Hanford Idaho Nevada Northern New Mexico

Oak Ridge Paducah Portsmouth Savannah River

INSERT DATE

Kelly K. Snyder
Designated Federal Officer
U.S. Department of Energy (DOE) Office of Environmental Management (EM)
1000 Independence Avenue, SW
Washington, DC 20585

Dear Ms. Snyder:

Justification: As DOE Headquarters endeavors to update its website, the EM Site Specific Advisory Board (SSAB) has been requested to provide input for the EM SSAB website and its content.

In order to educate and inform future board members, interested community groups, and the public in general, we want to maintain a detailed archive of board activities that is easily accessible from the website.

Recommendation: The board recommends that the EM SSAB website maintain and keep documents related to board activities in perpetuity. The documents shall be in a searchable archival online location available to the public. These documents include, but are not limited to, recommendations, responses, and minutes.

Who We Are

The EM SSAB is the DOE EM's most effective vehicle for fostering two-way communication between DOE EM and the communities it serves. The EM program is the world's largest environmental cleanup program, and the EM SSAB its only citizen advisory board. For more than 20 years, the volunteer citizens of the EM SSAB have partnered with EM officials at both the local and national levels to ensure that the public has a meaningful voice in cleanup decisions.

Public participation is required/recommended as part of a number of environmental regulations. It is also good business practice, resulting in better decisions that often result in improved cleanup. Since 1994, EM SSAB members have volunteered thousands of hours of their time and

submitted to EM officials over 1700 recommendations, 85% of which have been fully or partially implemented, resulting in improved cleanup decisions.

The EM SSAB comprises approximately 200 people from communities in Georgia, Idaho, Kentucky, Nevada, New Mexico, Ohio, Oregon, South Carolina, Tennessee and Washington. The Board is cumulatively representative of a stakeholder population totaling millions of people who are affected by generator sites, transportation routes and disposal sites. As we move forward, the EM SSAB welcomes the opportunity to highlight the value of this unique volunteer board and discuss its priorities during the months and years ahead.

Susan Coleman, Chair Hanford Advisory Board	Teri Ehresman, Chair Idaho Cleanup Project CAB	Anthony Graham, Chair Nevada SSAB
Patricio Pacheco, Chair Northern New Mexico CAB	Amy Jones, Chair Oak Ridge SSAB	Don Barger, Chair Paducah CAB
Jody Crabtree, Chair Portsmouth SSAB	Phyllis Britt, Chair Savannah River Site CAB	

PORTS SSAB

Portsmouth EM Site Specific Advisory Board

Chair
Jody Crabtree

Vice Chair
Herman Potter

Board Members
Sam Brady
Donna Carson
Bryan Davis
Randy Evans
John Hemmings
Wayne Mclaughlin
Lisa Pfeifer
Matt Setters
Beth Workman

Deputy Designated Federal Official
Jeremy Davis

DOE Federal Coordinator
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RECOMMENDATION 24-01: Portsmouth (PORTS) Environmental Management (EM) Site Specific Advisory Board (SSAB) Priorities for Site Budget

BACKGROUND: In recent years, the U.S. Department of Energy (DOE) Office of Environmental Management (EM) has requested input from advisory boards across the EM complex regarding community priorities as site budgets are formulated.

The PORTS Site Specific Advisory Board (SSAB) continues to recognize that each community has a unique set of circumstances to consider when establishing priorities for large-scale projects. The circumstances surrounding the Portsmouth site, located in an economically depressed area of Appalachia, are an economic climate with high unemployment and a need for advanced worker training. Therefore, a continued focus for the PORTS SSAB is on workforce continuity, job creation, a local workforce development and training program that will prepare the next generation workforce for the energy and environmental technology industry. Our community is full of capable, dedicated professionals who understand our challenges and look for innovative ways to work with government employers and the private sector companies to bring good jobs to the people of our impacted counties.

The PORTS SSAB emphatically supports continued funding for the Portsmouth decontamination and decommissioning (D&D) project to maintain the current employment levels and complete activities that will result in an end state that provides land and buildings and maintains site infrastructure for reindustrialization to ensure workforce stability during and after the D&D project. It is with confidence, and these critical circumstances for the Portsmouth site in mind, that PORTS SSAB makes the following recommendation.

As identified in previous recommendations, the PORTS SSAB continues to identify the following priorities as key pathways to success for DOE and the local stakeholders:

RECOMMENDATION: The PORTS EM SSAB again offers the following recommendations, as presented in PORTS SSAB Recommendation 23-01, concerning future budgeting and funding decisions:

- **Continue to investigate a path forward for metals recycling. DOE should be commended for the recovery of nickel from all converters. We applaud DOE for its progress on segmentation activities and we look forward to recycling efforts that will make the recovery worthwhile.**
- **Maintain and update infrastructure to support future reindustrialization. We recognize the collaborative efforts between DOE and the Portsmouth Community Reuse Organization, the Southern Ohio Diversification Initiative (SODI), including communication on infrastructure planning to best position the community for future economic success.**
- **Transfer property and establish utility use agreements between DOE and SODI to make property and utilities available to SODI for potential development. We want to thank DOE for its efforts related to Parcels 1 and 2 and believe it can be a catalyst for reindustrialization.**
- **Prepare for modification of the DOE baseline to make allotments for the forthcoming PORTS Site Strategic Plan that is being produced by SODI. The SSAB looks forward to working with DOE and SODI to find ways to coordinate the cleanup plan with the reindustrialization plan.**
- **Continue recycling efforts through the DOE-SODI Asset Transition Agreement. This program is providing SODI necessary resources to operate and continue its site repurposing activities.**
- **Support future workforce development and training programs that will prepare the next generation workforce for the D&D project, the region's energy and environmental technology industry, and future reindustrialization of the site.**

The PORTS EM SSAB offers the following new recommendations concerning future budgeting and funding decisions:

1. **DOE continues to move forward on an accelerated funding approach for the Portsmouth site. The Portsmouth site federal and contractor staff have proven that the technical approach and project management plan implemented for the coordination of D&D work, landfill excavation and waste cell construction and operation has been an unmitigated success.**
2. **DOE pursues inflation- adjusted funding to maintain stable spending levels. The greatest threat to successful site remediation is one of instability based on potentially inconsistent funding levels. Stable funding adjusted for inflation is the critical piece for site success.**
3. **DOE continues to support community investment initiatives through Community Commitment Plans in upcoming contracts. The Community Commitment Plan (CCP) as directed by JEDISO complements the vital work being done by SODI to bolster economic growth through the 4-county subregion directly impacted by the DOE site. As of June 2024, CCP investments over the last ten years totaling $3.1M have helped drive and facilitate the economic growth of the region through 170 projects valued at $1.1B. This growth is due to steady support from the CCP and a collaborative and shared vision for growth and reindustrialization throughout Pike, Ross, Jackson, and Scioto Counties. The relationship and interaction between multiple economic development agencies is at an all-time high in large part due to the supporting funds that come from the CCP.**

4. **DOE engages the state of Ohio Department of Development, local economic development agencies and labor unions to coordinate training and development options for the current and future work force. Workforce development not only assists DOE in completing their mission in a safe and timely manner, the additional benefit of having trained workers to supplement private industry is key to future economic growth. Having workers at adjacent facilities with an understanding and respect for federal work procedures, safety culture and production standards will make future interactions and shared services between the site and its neighbors more productive and cost effective. DOE should help coordinate its training efforts with potential training capabilities provided by the State of Ohio Department of Development. The state DOD is an untapped resource that could show immediate benefits to DOE and the community at large.**
5. **DOE recognizes and highlights the collaborative economic development efforts of the 4-county subregion that supports the PORTS site. Pike, Ross, Scioto, and Jackson Counties are unique subregions within the state with specialized workers, an understanding of the nuclear industry, and a willingness to support vital green energy projects. This uniqueness has been a hallmark for many years. Recently the cooperative efforts of the communities, DOE, and elected officials have rung a new era of collaboration and support. DOE and Economic Developers should be proud of these accomplishments, publicly claim this success and continue to look for mutually beneficial avenues for future win-win scenarios.**
6. **DOE investigates avenues for expedited property transfer. As all parcels transferred from DOE to SODI are spoken for via land sale or first right of refusal, we ask that DOE help the community maintain this momentum for growth and development and look for additional property to transfer in a timely manner. The SSAB thanks DOE for their efforts to expedite the process and for their willingness to continue to work with SODI moving forward. The board recommends that DOE continue to reassess D&D schedules to expedite transfers to continue efforts with property turnover to expedite reindustrialization.**

The PORTS SSAB would like to thank DOE for soliciting this input. The Board would like to thank DOE leadership and board management for the improved budget and funding education that has taken place over the last several months. This educational series, along with the emphasis on community health education and environmental monitoring data reporting sessions show a strong commitment to the partnership between DOE and the community.

Thank you for your attention to the Portsmouth D&D project and recognizing its importance to southern Ohio.

Recommendation 24-02
September 17, 2024

PORTS SSAB

Portsmouth EM Site Specific Advisory Board

SUPPORT SERVICES
EHI CONSULTANTS
PHONE: 740-289-5249
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RECOMMENDATION 24-02: Portsmouth (PORTS) Environmental Management (EM) Site Specific Advisory Board (SSAB) Recommends Continued Environmental Monitoring Communications

Background: In the spring of 2019, community concerns arose following the distribution of the 2017 Portsmouth Annual Site Environmental Report (ASER) that indicated transuranic contaminants were detected in an air monitor adjacent to Zahn's Corner Middle School. Additional information followed that another transuranic element was discovered in 2018 monitoring, which preceded the Scioto Valley Local School District closing Zahn's Corner Middle School in May 2019.

The following January, The PORTS Site Specific Advisory Board (SSAB) issued *Recommendation 20-01: PORTS EM SSAB Recommendation on Enhanced Communication Efforts Related to Environmental Monitoring Information.* The Board recommended that DOE provide more timely information on all environmental monitoring data related to the PORTS site. The Recommendation suggested that the data be made available in easy to access online locations as well as in regional libraries for those who don't have access to online tools.

In response to SSAB Recommendation 20-01, as well as a commitment to transparency and accountability in matters concerning human health and the environment, DOE established the *portsdemo.com* website that provided timely information and updates throughout the last several years. In particular, special focus was given to the environmental monitoring data associated with the open air demolition of the X-326 uranium-enrichment Process Building.

The SSAB commends DOE, its contractors, and the Ohio Environmental Protection Agency on the collaborative work required to collect, validate, corroborate, and report thousands of points of environmental data. This great effort helped inform and educate the local stakeholders most directly impacted by the cleanup project. This work is a prime example of the benefit of continued open dialogue between all parties with vested interests in the cleanup of the PORTS site.

RECOMMENDATION: The PORTS EM SSAB again offers the following recommendations

- **DOE continues to make communication of environmental monitoring data a priority and provide data in as timely manner as reasonably possible.**
- **DOE should ensure adequate funding to provide information comparable to that provided for the X-326 building, for the upcoming X-333 demolition with similar updates and dashboard data.**

The PORTS SSAB would like to thank DOE for soliciting this input. The Board would like to thank DOE leadership and board management for the improved communication and data reporting efforts. The development and upkeep of the *portsdemo.com* website, along with the emphasis on community health education and environmental monitoring data reporting sessions show a strong commitment to the partnership between DOE and the community.

Thank you for your attention to the Portsmouth D&D project and recognizing its importance to southern Ohio.

Appendix 4

PORTSMOUTH SITE SPECIFIC ADVISORY BOARD
ANNUAL WORK PLAN
Fiscal Year 2025

This SSAB Work Plan has been agreed upon by U.S. Department of Energy and the Portsmouth Site Specific Advisory Board on September 17, 2024:

PORTS SSAB

U.S. DEPARTMENT OF ENERGY

Donna Carson
PORTS EM SSAB
Board Chair
Signature on File

_____
Donna Carson, Board Chair
Portsmouth SSAB

Jeremy D. Davis
Portsmouth Site Manager
Portsmouth/Paducah Project Office
Signature on File

_____
Mr. Jeremy Davis, DDFO
Department of Energy Portsmouth Site

INTRODUCTION

The Portsmouth Gaseous Diffusion Plant (PORTS) Site Specific Advisory Board (SSAB) is a stakeholders' board, chartered to provide advice and recommendations to the U.S. Department of Energy (DOE) on decontamination and decommissioning, environmental remediation, waste management, and related issues at the Portsmouth Site. The Portsmouth/Paducah Project Office (PPPO) manages the Environmental Management (EM) activities in Portsmouth.

The PORTS SSAB is comprised of volunteers, chosen to reflect the diversity of gender, race, occupation, views, and interests of persons living near the Portsmouth Site. The board is committed to reflecting the concerns of the communities impacted by the environmental management of the plant site. Besides DOE, the Ohio Environmental Protection Agency (OEPA) and the Ohio Department of Health (ODH) are represented in an advisory capacity.

The scope of the PORTS SSAB is to provide advice and recommendations concerning the following EM site-specific issues: environmental restoration; waste management; recycling; future land use and long-term stewardship. The Board may also be asked to provide advice and recommendations on any other EM projects or issues.

The PORTS SSAB meets to hear presentations by persons working on relevant environmental management topics, listen to and discuss input from citizens, consider recommendations developed by the PORTS SSAB subcommittees, and perform other business. The PORTS SSAB strives for consensus in reaching decisions and conducts business under a set of bylaws, standing rules, and special rules of order, which incorporate the principles of *Robert's Rules of Order*.

This Work Plan addresses the PORTS SSAB priorities for the 2025 Fiscal Year. Although the Board intends to structure its activities to focus on the priority projects, it is understood that other topics may present themselves that could result in deviation from the Work Plan. A prescribed process is followed to alter the PORTS SSAB work plan with alterations accepted and approved by both the PORTS SSAB and DOE.

PORTS SSAB ADMINISTRATIVE BOARD MEETINGS

PORTS SSAB administrative meetings are intended to communicate the business of PORTS SSAB and to discuss and vote on recommendations to be submitted to DOE. In addition, Deputy Designated Federal Official (DDFO) comments will be made in the form of a presentation intended to brief PORTS SSAB members on recent developments and provide site highlights and accomplishments.

PORTS SSAB meetings will also be the forum for educational presentations that complement the working session or site management matters. Examples of suggested topics for presentations may include the annual budget process and risk education.

PORTS SSAB Board Meeting Dates:

- September 17, 2024
- November 19, 2024
- February 18, 2025
- April 15, 2025
- June 17, 2025

Month	PORTS SSAB Topic	Presentation Narrative
Sept 2024	Site Overview	-kickoff board year with key site initiatives and projects
	PORTS Board Business	-Adopt Workplan -Elect Board Leadership -Board Recommendations -Chairs Recommendation
	Summer Intern Program	-Overview of Summer Intern Program
Oct 2024		
Nov 2024	ASER	-What is the ASER -Environmental Monitoring Overview -Findings from 2023 -Student ASER program
	Environmental Monitoring Overview	-Review of previous presentation on Monitoring -different media/ locations -testing ranges, reporting data -calculating risk
Dec 2024	Contractor Community Involvement Plan	-brief overview (5 – 6 slides) on community engagement efforts and outreach initiatives from each contractor
Jan 2025		
Feb 2025	Federal Site Lifecycle Estimate	-intro to FSLE -how it's developed and maintained -approval process and update process -Site Life Cycle Estimate **INPUT: PORTS SSAB concurrence and input on future iterations and community outreach on FSLE**
	Funding and Budget Update	-overview of key site projects -funding and budget update -site spending priorities -baseline projections -funding impacts **INPUT: PORTS SSAB input on future funding requests stating priorities and values**
March 2025		
April 2025	Land Transfer Update	-Land Transfer Process -Future Use Vision/ End State -Timeline

	OU/SODI	-overview of community future use initiatives -update on land studies -shared vision for future
May 2025		
June 2025	PFAS Update DUF6 Update	-brief introduction to PFAS -historical overview of PFAS initiatives -PFAS and its uses at the site -current regulatory position -remediation plans and implementation schedules -testing and impacts -next steps **INPUT: PORTS SSAB concurrence on path forward and community education** -overview of DUF6 mission -update on progress and status for future -changes to contractor responsibilities with OSMS
July 2025	Site Tour	-site tour highlighting board accomplishments, future land use, and key initiatives
Aug 2025	PORTS SSAB Board Planning Session	

PORTS SSAB will establish an Executive Committee to help with updating Board Operating Procedures, membership recruitment efforts, and the annual funding request recommendations.

Portsmouth SSAB Workplan

Recommendation Request Plan
PORTS SSAB
FY 2025

Work Plan Item #25-01	**Work Plan Item:**	*PORTS SSAB Board input on future iterations of Federal Site Lifecycle Estimate (FSLE) and community education on FSLE*
	Briefing/Discussion Dates:	*February 2025*
	Recommendation Deadline:	*April 2025*
	Description:	Background: *The FSLE lays out planning priorities including sequencing of projects that direct the cleanup work onsite.* EM SSAB Scope: *DOE is seeking concurrence on the broad stroke planning objectives as well as identifying potential elements within the decisions that the board can provide value and input. Additionally, we will ask the Board how to communicate the information within the FSLE to the community at large.*

Work Plan Item #25-02	**Work Plan Item:**	*PORTS SSAB Board Input on Future Funding requests stating board priorities and values*
	Briefing/Discussion Dates:	*February 2025*
	Recommendation Deadline:	*April 2025*
	Description:	Background: *Site Funding Requests, especially specific year over year numbers, are often embargoed at the time of this presentation. DOE will discuss active projects and future strategies and plans for remediation of the site.* EM SSAB Scope: *The board will provide DOE with a list of priorities/ values that the membership feels are most important to the community for a successful cleanup. DOE can use this list of priorities/ values as a measuring stick for future budget requests and internal budget discussions.*

Work Plan Item #25-03	**Work Plan Item:**	*PFAS Update and Board advice on path forward and community education needs*
	Briefing/Discussion Dates:	*June 2025*
	Recommendation Deadline:	*September 2025*
	Description:	Background: *PFAS studies are being completed and regulatory direction is being determined. The cleanup response will greatly impact the future cleanup schedule of the site. Understanding the regulatory, environmental and human health implications are vital to the future cleanup success of the site.* EM SSAB Scope: *The board will provide DOE advice, based on community values and preferences, on how to implement PFAS cleanup requirements and timeline strategies as part of the overall mission of the program.*

Appendix 5

Hello, and thank you for allowing me to give my written public comment, in lieu of attending in person. My name is Emily Stone. I am 40-year-olds old, and the mother to three children, ages 20, 15, and 5. And yes, the large age gap with my kids is as challenging and chaotic as one could imagine that it might be! A conversation at my dinner table, on any given day, can include discussions about college majors, the typical high school drama, and Peppa Pig, all in one sitting. I smile and tear up as I type this, knowing that these days are the best days of my kids' lives right now. However, these days are on borrowed time. I tell you this about my children, not because I think you have an interest in them or in my family, but to maybe help you see, even if it's for a brief moment, this is what "normalcy " is supposed to look like. That normalcy isn't our reality most days though.

I am unable to attend the meeting in person due to me being at home recovering from major surgery. As previously stated, I am 40 years old, and I will have had a total hysterectomy by the time you read this letter. This is not a wanted procedure, but one being done out of medical necessity. This is just one of several health issues that I have. I am now getting to watch both of my daughters, ages 15 and 20, go through the same things that I did. However, their issues have started much earlier than mine. At two di erent times, with two di erent physicians, I've asked the doctors what they think the reason could be for our problems. One responded by saying, "we're in southern Ohio. It happens to the majority." The second doctor responded by throwing their hands up and saying, "you know what's right up the road from here! About a 20-minute drive north on US 23!"

The last time I drove up this way, it took me 22 minutes to get to those gates. The doctor was o by two minutes. I've watched my siblings also have major, multiple health problems. Both of my siblings left home when they graduated high school. I chose to stay because I loved this town. This was home for me. I could have never imagined wanting to live anywhere else than where I do. The rivers, forests, hills are all a beautiful selling point, but it's the people that made it home. It was the people and family that made this home. Nowadays though, I would move far away from here if the right opportunity approached. I'd take my family away from here and never look back! Unfortunately for me though, almost all my people are now gone. Not gone because they chose to move away but gone because they died. Many of those deaths have been from cancer. And not just any cancer, it's the rare kind. The ones that most people might know one person in their life who had that type of cancer. When I say most people, I am referring to people that live far away from this place. Not us though. If it's the worst of the worst, then that's for us. Or so that's how it seems to be.

My dad was Brian Waller. He was a proud West Sider, and one of the toughest guys that I have ever known to this day! He was a USMC Veteran, a Heavyweight Toughman Champion, a deacon in his church, a great friend to many, a loving husband and father, and an even more loving grandfather. He was also employed at the A-Plant for over 35 years as a

security guard. My parents rarely ever fought when I was young, but I do vividly recall some of the arguments that I heard. My Mom would be so upset about Dad wearing his work boots in the house. The boots that he had worn at that plant for all his shifts. I didn't hear any mention of him having the same clothes on that he wore at the plant, but the boots were a big sore spot with her. I felt bad for Dad the times that Mom would catch him giving my sister and I little horsey rides while sitting on his feet. We didn't understand what the big problem was then, but oh now, do we ever!

The stories that he would tell us through the years of all the things he would see happening out there. From the glowing deer, the contaminated run-off ditches that were no longer in use, him (along with many others) sleeping with their heads resting along those "safe pipes" in the X-326 building, descriptions of how pretty the neon green ooze was that would drip off some of those pipes and walls. He described it like a scene from the tv show the Simpsons. How Homer Simpson worked in that nuclear power plant and was always messing with that green ooze. I heard it not only from him, but from his friends and co-workers also. About how when someone would question if the neon green ooze looking stuff was safe, their boss would run their hands through it and say that it was so safe they could drink it. The stories about people getting caught changing badge readings and how people turned them in for doing it. Then those people got in trouble for doing the right thing. About the leaking cylinders and how everyone was told to turn a blind eye to it. My favorite story though might be the time in 2014 when his job was threatened after he told an upper that he didn't want to go in the X-326 bldg. because he knew what was in it. The only difference between years before and then is that the local laborers and contractors were in there cutting those pipes and stirring that stuff up. So, he followed his orders as he was forced and told to do, and he went in. No PPE of course because "it was safe". Within weeks, symptoms started showing and in about two months total, he was officially diagnosed with A.L.L. leukemia. He died two years later on September 3, 2016.

I will always share my Dad's story because I will not let his death be in vain! He now has three grandkids who he never got to meet. He has one grandchild who talked for years about how they missed Pappaw taking them to the candy store and letting them get whatever they wanted. He has one grandchild who made it their goal to play college softball because his literal last words to her were, "just keep playing." And she did just that! She accomplished her goal that she sat out to do in honor of him!

It was always said that "it's not if you're going to get it, it's when". I heard that saying my entire life! It was something that everyone expected and knew would probably happen when they worked out there. But now, for this to be out in the community as much as it is, and for DOE and Fluor to continue to turn a blind eye to it is unbelievable! THREE KIDS at Portsmouth West with rare cancers and brain tumors in a one-year span, not counting the others that have occurred since then! TWELVE KIDS who have passed at Zahn's Corner.

MANY other local kids who have passed from the same rare cancers that people around here are now getting.

When will human lives matter more than greed and love of money? Why are there dead trees all along the hilltop on McCorkle Road? Why do building alarms go off at the plant, then workers are told that they're just false alarms? Why is the public NEVER informed when a leak happens? Is there a procedure to notify the public when something happens, and if so, what is that protocol? Why are high school kids out there at the plant in May 2024, when there was a release that happened in May 2024? Were their parents notified? Why are workers talking about rad levels being changed? Why are there so many laborers/teamsters that are sick in just a matter of weeks of each other? What about the ground moles that are eating through the liners at the dump sites? Did they ever figure out how to stop that? WE ARE NOT MAKING UP ALL OF THIS STUFF!

Our lives are destroyed by the people that continue to turn a blind eye to all of this! The sad thing is that not only is it our lives, it's your own lives and family members as well that's being killed and hurt! MAKE IT MAKE SENSE! As I stated at the last meeting, if you guys say your testing and numbers are accurate, and our guys are saying no they aren't, then why can't a meeting happen to compare notes and information? We all know the answer as to why you guys will never sit down with our people. We aren't the bad guys, but we're treated as such. Why did I watch a video from the last SSAB meeting multiple times, to see some members of the board not even turn and look at the community members speaking when it was their turn? Why did I see members at times trying to hide their smirks when we are only begging for help and the truth! I might be just a regular everyday person when it comes to all this nuclear mess that we're living in, but I at least know my manners and will look at someone when they are speaking to me! I will turn my chair around and attempt to pretend to care instead of sitting with my back to them the entire time! RIGHT IS RIGHT AND WRONG IS WRONG! That starts from the smallest things such as manners and showing respect and goes all the way up to contaminating and killing a whole entire community!

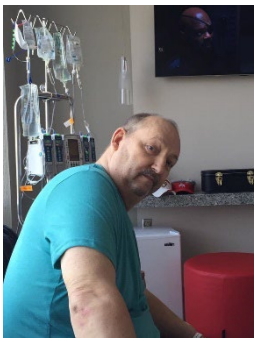
Either way this all turns out, whenever my day comes, at least my kids (and community) will know that I tried to do the right thing. I didn't just sit by and stay silent!

Thank you for your time.

Emily Stone

Resident of West Portsmouth, OH






Appendix 6

To whom it may concern ,
I am writing to have my thoughts and words documented so that you may read and acknowledge that we are the unknowing victims of the past and present contamination from the Portsmouth Plant located here in Piketon Ohio .
In my opinion , the people of Pike and Scioto Counties deserve better than we have been receiving from this Site .
According to reports from Dr Joe Mangano and Dr Michael Ketterer , we are living in a highly dangerous environment. We cannot continue to be silent while so many have died and still fighting cancer and other illnesses related to radiation exposure .
The practices of the ports plant in the past decades have been exposed and documents that others have shown in the past have proven that fact .
Now to the present day, we are finding that the contamination has gone farther than we expected. The many factors that have contributed to the contamination is shocking . We are demanding as citizens of our once beautiful Pike County , that DOE be transparent with the people . We need answers , truthful answers as to what the future plans are to help this community be a safer place to live . The suffering has gone untold and unnoticed for far too long . We will not stay silent and we will continue to search for the truth as to what is happening and what has been hidden from the people . The future is uncertain but far worse than that are the consequences of the actions of the Ports Plant and its many projects of building more and growing bigger with companies like Trillium and OKLO . We say No more ! Enough have perished , enough have paid the price of the negligence and incompetence of the past .

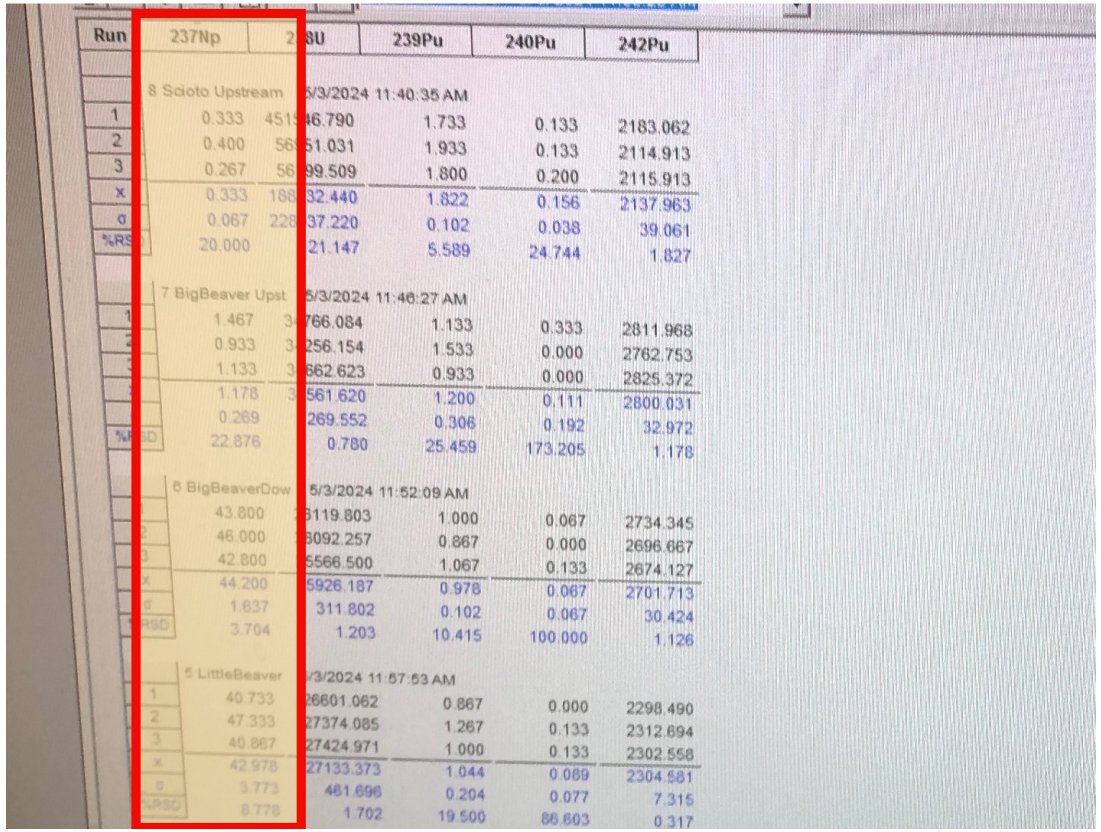
We shouldn’t have to live in fear of getting sick with Cancers or watch children get rare cancers and die .

Gina Doyle

Sent from my iPhone

Appendix 7

Plant uptake of neptunium-237 in the riparian zone at the Little Beaver Creek – Big Beaver Creek confluence area near the former Portsmouth Gaseous Diffusion Plant



Run	237Np	239Pu	240Pu	242Pu
8 Scioto Upstream		5/3/2024 11:40:35 AM		
1	0.333	46.790	1.733	0.133	2183.062
2	0.400	51.031	1.933	0.133	2114.913
3	0.267	99.509	1.800	0.200	2115.913
x	0.333	82.440	1.822	0.156	2137.963
σ	0.067	37.220	0.102	0.038	39.061
%RSD	20.000	21.147	5.589	24.744	1.827
7 BigBeaver Upst		5/3/2024 11:46:27 AM		
1	1.467	766.084	1.133	0.333	2811.968
2	0.933	256.154	1.533	0.000	2762.753
3	1.133	662.623	0.933	0.000	2825.372
x	1.178	561.620	1.200	0.111	2800.031
σ	0.269	269.552	0.306	0.192	32.972
%RSD	22.876	0.780	25.459	173.205	1.178
6 BigBeaverDow		5/3/2024 11:52:09 AM		
1	43.800	3119.803	1.000	0.067	2734.345
2	46.000	3092.257	0.867	0.000	2696.667
3	42.800	5566.500	1.067	0.133	2674.127
x	44.200	5926.187	0.978	0.067	2701.713
σ	1.637	311.802	0.102	0.067	30.424
%RSD	3.704	1.203	10.415	100.000	1.126
5 LittleBeaver		5/3/2024 11:57:53 AM		
1	40.733	26601.062	0.867	0.000	2298.490
2	47.333	27374.085	1.267	0.133	2312.694
3	40.867	27424.971	1.000	0.133	2302.558
x	42.978	27133.373	1.044	0.089	2304.581
σ	3.773	461.696	0.204	0.077	7.315
%RSD	8.778	1.702	19.500	86.603	0.317

Michael E. Ketterer, PhD

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NAU NORTHERN ARIZONA UNIVERSITY

Executive Summary. We investigated, and have confirmed, a significant extent of plant uptake of neptunium-237, a 2.1 million year half-life synthetic radioisotope attributed to the Portsmouth Gaseous Diffusion Plant (PGDP). We studied vegetation growing in the riparian zone at the confluence of Little Beaver Creek with Big Beaver Creek, located downstream in the drainage of the north end of the former PGDP.

Previous work by the author and community members has demonstrated the widespread presence of PGDP-attributed ^{237}Np in creek water and sediments at the confluence. Unclassified DOE documents dating back to the mid-1970's show that DOE and its contractors were well aware of the presence of ^{237}Np and made unsuccessful efforts to contain soluble neptunyl cation (NpO_2^+) and to prevent its entry into groundwater and into Little Beaver Creek upstream of the riparian study area.

Surface soils, sediments and creek waters were sampled by the author on March 2-3, 2024 in collaboration with Lee Blackburn and Vina Colley; a sample of live/dead standing riparian vegetation was collected on August 31, 2023 by Lee Blackburn and Vina Colley. The samples were chemically processed at Northern Arizona University, and subsequently analyzed by inductively coupled plasma mass spectrometry in an Arizona-licensed radioisotope lab facility to determine the concentrations of neptunium-237 in soil/sediment samples, and in plant ash samples. The results were used to calculate the neptunium-237 concentrations in picograms ^{237}Np per gram for solid samples and in picograms ^{237}Np per liter for the water samples.

The results demonstrate the following:

1. The riparian zone at the confluence of Little Beaver Creek and Big Beaver Creek, downstream of the former uranium enrichment facility, has become contaminated with enriched uranium,^{237}Np, and $^{239+240}$Pu. The contaminant stems from past/present PGDP discharges into soil and water on the northern portion of the DOE reservation, draining into Little Beaver Creek. Riparian zone concentrations of ^{237}Np in soils and sediments ranged from 8 to 21 picograms ^{237}Np per gram. ***Concentrations of neptunium from PGDP in soils/sediments within the confluence zone are approximately one hundred times higher than accountable from ubiquitous 1950's-1960's nuclear weapons test fallout.***

2. The fact that the neptunium originated from PGDP and not fallout, is established by measurements of ^{237}Np/^{239}Pu in sediments of the confluence zone isotope compositions in riparian zone sediments. The Np-Pu isotope signatures in the confluence sediments are grossly elevated, with ^{237}Np/^{239}Pu atom ratios exceeding 100, unlike global fallout (^{237}Np/^{239}Pu = 0.47; Kelley *et al*., 1999). The confluence zone contains input from material described in Lawrence Livermore National Laboratory's "Moody report" (Moody, 1995), a study that directly sampled materials within the PGDP process buildings.

3. Neptunium-237, attributed to the PGDP, is present in Little Beaver and Big Beaver Creek waters at concentrations of 0.8-1.0 picograms of ^{237}Np per liter, in the probable form of neptunyl cation. Plutonium could not be detected in 0.5 liter creek water samples.

4. Neptunium-237 was found at concentrations of approximately 2 pg/g in dry plant matter; there is significant neptunium uptake into grasses, based on limited measurements of one composite streambank grass sample. A soil-to-plant transfer factor, or concentration ratio, of 0.16 $\pm$ 0.06 was calculated from the results. This transfer factor is intermediate between literature values ranging from 0.001 to 10 for neptunium observed in different published studies of transfer factors measured in greenhouse and field studies. The Department of Energy is well aware of ^{237}Np plant uptake; DOE Basic Energy Sciences has funded studies (e.g., Montgomery *et al.,* 2023), yet DOE has not, in five decades, spoken directly to the citizens of southern Ohio about radionuclide uptake in plants near the PGDP.

5. The soil-to-plant transfer factor shows that ***in areas near the former PGDP that have been affected by water or air releases of ^{237}Np, this isotope is plant-available. Persons consuming foods grown within 10-15 miles of the DOE Portsmouth reservation are cautioned that they may be ingesting ^{237}Np.*** The study also observed that uranium is plant-available in the riparian zone, as the plant ash ^{235}U/^{238}U and ^{236}U/^{238}U atom ratio signatures reflected uptake of the PGDP-attributed enriched uranium in water and sediments.

6. Further work is warranted to understand the soil-to-plant transfer behavior of neptunium, along with uptake of enriched uranium, plutonium-239/240, and technetium-99 in native and cultivated plants growing near the former Portsmouth Gaseous Diffusion Plant.

Context of the study. Piketon, Ohio is the location of a decommissioned, partially demolished uranium enrichment facility that formerly produced low- and high-enriched uranium in three vast-scale uranium hexafluoride gaseous diffusion process buildings. At the US Government-owned Portsmouth gaseous diffusion plant (PGDP), which operated from 1954 until 2001, specific grades of enriched uranium were produced for power reactors, naval submarine reactors, and nuclear weapons. The recently demolished X-326 "high enrichment" process building was capable of refining uranium hexafluoride up to enrichment levels of 97% uranium-235.

Annual site environmental reports (ASER) published by the US Department of Energy (e.g., DOE, 2023) reveal various legacy and ongoing, contemporary off-site environmental impacts from the former PGDP. Radioisotopes specifically associated with PGDP include uranium (^{234}U, ^{235}U, ^{236}U, and ^{238}U), ^{99}Tc, ^{237}Np, ^{239}Pu, ^{240}Pu, and others; release pathways consisted of discharges to air, soil, surface water, and ground water.

The uranium enrichment facility at Piketon was designed to perform isotope separations by gaseous effusion of high-purity uranium hexafluoride. During the early Cold War era, as the US Government faced mounting demands for its uranium supplies, the PGDP operators commenced introducing what is commonly referred to by DOE staff as "reactor returns", namely, recycled uranium laden with varying amounts of ^{99}Tc, ^{237}Np, and Pu impurities remaining from the PUREX process (Moody, 1995). By the mid-1970's, the US Government's PGDP contractor, Goodyear Atomic Corporation (GAT) was aware of "transuranics", referring to findings of accumulations of Np and Pu at specific locations and material streams within the facility. A December 28, 1976 internal GAT memorandum **(Attachment 1)** expressed alarm over high Np and Pu concentrations in the MgF_2 solid sorbent traps used to scrub gases vented from bypassed sections of the cascade: *"one magnesium fluoride trap contained 190,000 d/m/g of neptunium-237 and 269,000 d/m/g of plutonium isotopes. Because of the grave dangers inherent in transuranics, both to human health and the environment, we request that all materials recovered from X-705 Oxide Conversion operations be sampled for transuranics before being processed for uranium recovery".*

Efforts by GAT commencing in the mid-1970's, aimed at constraining "transuranics" from being released into the environment, were only partially successful. To wit, the Department of Energy's PEGASIS database (DOE, 2024) reports 1.48 pCi/L ^{237}Np (2100 pg/L) in an August 8, 2018 groundwater sample from onsite Well X701-20W, indicating that a ^{237}Np groundwater plume is present (**Attachment 2**). This ^{237}Np plume is not discussed in DOE's ASER reports, however, based upon its location, it directly impacts Little Beaver Creek and its underlying shallow alluvial aquifer.

The Department of Energy (DOE) and its Federal predecessor agencies have known since no later than 1976 about a "transuranics" contamination problem at the Portsmouth gaseous diffusion plant, and its potential impact upon Little Beaver Creek. Nevertheless, there have been only limited studies of plant uptake of radionuclides near the PGDP, conducted for ^{99}Tc (Hoffman *et al.,* 1980; Acox, 1982; Hoffman *et al.,* 1982). These studies all point to transfer factors that exceed unity; Hoffman (1982) found a geometric mean of 7.4 and a geometric standard deviation of 2.8 for ^{99}Tc transfer factors in plants near collected in the perimeter zone of the PGDP site, indicating very high levels of Tc uptake into vegetation.

While the DOE has failed to address community members near PGDP about plant uptake of neptunium or other PGDP radionuclides, DOE-Basic Energy Sciences has long provided significant funding for research on the environmental behavior of neptunium, including its plant uptake properties (Peruski *et al*., 2018; Montgomery *et al*., 2023).

Methods. An August 2023 composite sample was collected of live and dead native annual grasses growing along the banks of Big Beaver Creek, from a location approximately 100 meters downstream of the confluence with Little Beaver Creek (**Attachment 3**). Thatch was cut with scissors at a level 5 cm above the ground. Care was taken to not include roots, nor any sediment adhering to the lower portion of the plants' stems. After collection, the grass was dried for several weeks in ambient air. The dry plant material was observed to be relatively free of adhering soil/sediment particles; it was shaken vigorously to remove any loosely adhering particles, although it was not subjected to any specific washing treatment. The dry grass was ground with a food processing mill, and was dry-ashed in an electric furnace at 450° C. The ash content of the ground plant material was 22 % of its dry mass.

Composite 500 gram samples of the top 10 cm of streambank soil/sediment, and humic floodplain soil were collected at different locations in the Little Beaver Creek - Big Beaver Creek confluence area. Composite samples of freshly deposited fine-grained sediments were also obtained from concrete bridge piers in the confluence area. Water samples ranging between one and three liters were collected in PET plastic containers (**Attachment 4**). Soil and sediment samples were oven-dried at 60° C and screened with a 0.4 mm brass sieve; five gram sub-samples were taken for analysis and dry-ashed at 550° C in 40 mL vials. Water sub-samples of 0.5 liters were used for ^{237}Np concentration measurements using the flow chart shown in **Attachment 5**.

Plant ash and sediment samples were similarly prepared for inductively coupled plasma mass spectrometry (ICPMS) analysis using the **Attachment 5** Pu separation process starting with Step 6. All sample types were spiked with an acid solution form of 28 picograms of ^{242}Pu, prepared using a stock solution purchased from the US National Institute of Standards and Technology (NIST 4334i). Soil, sediment and plant samples were leached with 20 mL of concentrated 70% nitric acid. Five gram sub-samples of a "negative control" consisting of powdered sandstone, as well as weapons-test positive control soils, known to contain ^{237}Np from global fallout, were also prepared. The results indicated reliable ^{237}Np measurement performance, and the ability to readily distinguish between "global fallout" and non-global fallout sources of neptunium, based on measurements of the ^{237}Np/^{239}Pu measured in control samples of known fallout or other provenance. A known "fallout" control soil, obtained from the Urseren Valley, Switzerland exhibited ^{237}Np/^{239}Pu = 0.47 $\pm$ 0.01 and ^{240}Pu/^{239}Pu = 0.193 $\pm$ 0.005. The atom ratios both agree very well with the Np - Pu atom ratios for global or "stratospheric" fallout described in Kelley *et al.* (1999). The agreement implies that Np and Pu are exhibiting parallel chemical behavior in this specific lab batch's chemical separations, enabling ^{237}Np measurements to be made using ^{242}Pu as a surrogate neptunium tracer.

To determine concentrations of ^{237}Np, ^{239}Pu and ^{240}Pu, a Thermo Scientific X2 quadrupole ICPMS was used at Northern Arizona University. The instrument was equipped with an APEX Model HF high-efficiency fluoropolymer sample introduction system and an APEX self-aspirating PFA Teflon concentric nebulizer. Ion count data were obtained in a peak-jump mode, using 10 millisecond dwell times at masses 237, 238, 239, 240, and 242. One "run" of 58 seconds consisted of 1000 sweeps through these five peaks; three to six "runs" were acquired for each sample solution. The ICPMS was tuned with a uranium-238 solution sensitivities were approximately 500,000 counts per second for the tuning solution; UH^+ yields were 0.000040 or less. The background count rates measured at mass 237 and 240 in "negative control" soil/sediment samples were less than one count per second, and less than two counts per second at mass 239.

Neptunium-237 was readily detected, at ion count rates well above ICPMS detection thresholds, for all samples of confluence zone water, soil, sediment and plant ash samples (e.g., detection of ^{237}Np in waters is shown in **Attachment 6**).

Results. **Attachment 7** shows results for ^{237}Np concentrations in picograms per gram, $^{239+240}$Pu activities, and the atom ratios ^{237}Np/^{239}Pu and ^{240}Pu/^{239}Pu for the confluence soil/sediment samples, the grass composite sample, and the Urseren control soil. The most striking feature of these results is the elevated ^{237}Np concentration in surface soil and freshly deposited sediments at the creek confluence. In comparison to the Urseren (stratospheric fallout) soil's concentration of 0.120 $\pm$ 0.002 picograms ^{237}Np per gram, concentrations of ^{237}Np in soils/sediments at the confluence area are about 100-fold elevated, ranging from 8 to 21 pg/g. It is apparent that the PGDP proximity represents an unusual "hotspot" of ^{237}Np environmental concentrations in ambient environments. At the same time, however, the $^{239+240}$Pu activities in confluence-area soil/sediment samples do not appear to be elevated in comparison to $^{239+240}$Pu activities normally associated with ubiquitous stratospheric fallout. However, the ^{240}Pu/^{239}Pu atom ratios in the soil/sediment confluence zone samples clearly reflect different Pu sources in addition to stratospheric fallout; the plutonium detected in the confluence area soil and sediment samples appears to be comprised of a mixture of stratospheric fallout, with a major added PGDP Pu component resembling the Moody (1995) signatures. The very high ^{237}Np/^{239}Pu ratios in the creek confluence soil and sediment samples underscore the unusual accumulation of non-fallout "transuranics" from PGDP in the Little Beaver-Big Beaver Creek riparian environment.

Attachment 7 also has results for the plant samples, with ^{237}Np and $^{239+240}$Pu being reported in terms of dry plant matter concentrations. The ^{237}Np concentrations indicate that significant uptake of neptunium into grasses is occurring in the riparian zone, just as one anticipates based upon the lab-measured transfer factors in Montgomery *et al.* (2023). The average of the plant-measured ^{237}Np/^{239}Pu atom ratios, 185 $\pm$ 20, is congruent with uptake of Np (and Pu) from the confluence-area soil/sediments (^{237}Np/^{239}Pu = 168 $\pm$ 20), rather than from ubiquitous stratospheric fallout sources (namely, ^{237}Np/^{239}Pu atom ratios are less than one, as reported in DOE-funded work by Kelley *et al.,* 1999).

The average ^{237}Np and $^{239+240}$Pu concentrations in the streambank grass are 2.05 $\pm$ 0.18 picograms per gram and and 0.034 $\pm$ 0.2 Becquerels per kilogram, respectively. For the confluence-area soils and sediments, the corresponding ^{237}Np average is 12.8 $\pm$ 4.8 picograms per gram, and $^{239+240}$Pu was found at 0.29 $\pm$ 0.21 Becquerels per kilogram. A resulting ^{237}Np transfer factor of (0.16 $\pm$ 0.06) is hence obtained. The magnitude of the transfer factor dictates that Np exhibits considerable plant uptake, and that portions of the soil column's Np inventory are being extracted from the soil, accumulating in plants, to be returned after the growing season to the top soil horizons, thereafter recycled and taken up into new plants repeatedly. The transfer factor for ^{237}Np is intermediate between factors of ~ 0.001 measured by Wallace *et al.* (1978) and the 1 to 10 range values reported in *Andropogon virginicus* grasses in greenhouse studies by Montgomery *et al.* (2023).

Neptunium-237, attributed to the PGDP, is present in Little Beaver and Big Beaver Creek waters at concentrations of 0.8-1.0 picograms of ^{237}Np per liter for samples collected on March 3, 2024. Neptunium could not, however, be detected in Big Beaver Creek waters, upstream of the entry of contaminated PGDP drainage in Little Beaver Creek. This confirms the nexus between the neptunium reported in onsite groundwaters by DOE in Pegasis, and dissolved neptunium in creek water. It is likely that the riparian plants are taking up neptunium through a combination of the fresh Np flux delivered directly in creek water, and uptake of Np from the large stored reservoir of this isotope in confluence zone soils/sediments.

Studies are needed of the species form of neptunium that is present in the water. The literature points to the stability of NpO_2^+ (aq), known as neptunyl cation, and suggests that this is the expected species of neptunium present in most natural waters under neutral or slightly acidic pH's where some dissolved oxygen is present.

Additional work is needed to measure a more extensive spatial/temporal set of soil, sediment, plant and plant samples, to better define the transfer factors for ^{237}Np, as well as other PGDP-sourced radionuclides, in field and greenhouse-based experiments. Previous DOE work in the early 1980's (Hoffman *et al.,* 1980; Acox, 1982; Hoffman *et al.,* 1982) examined the plant uptake of technetium-99 into plants near the then-operating PGDP, and measured very strong uptake with transfer factors exceeding unity. ***The public is urged to pay attention to soil quality when consuming local plants grown near PGDP.***

Attachment 1

INTERDEPARTMENTAL CORRESPONDENCE

TO: Listed Distribution

DATE: December 30, 1976
FROM DEPT: 922
CODE NO: GAT-922
REFERENCE:

DEPT:
LOCATION:

SUBJECT: CONTAMINATION FROM TRANSURANIC ELEMENTS

Traces of transuranic elements, such as plutonium and neptunium, are present in reactor-return materials processed in the X-705 Building, These elements recently have been detected in sludge from the X-701-B Holding Pond and in spent trapping materials stored in the X-744-G Warehouse. Because transuranics represent a health hazard, it is necessary to take appropriate steps to assure the safety of GAT personnel and the local environment.

Also, GAT analytical procedures for transuranics must be improved. The liquid effluents from X-701-B in the East Drainage Ditch have been monitored for transuranics since November 1976, but present GAT analytical procedures have a limit of detection that is equal, at best, to about 7 percent of the ERDA recommended. concentration guide (RCG) for neptunium-237. These detection limits should be lowered to below 1 percent of the RCG to increase the effectiveness' of the environmental monitoring program. The detection limits for airborne transuranics should be improved similarly.

To accomplish these purposes a committee is hereby formed comprising the following persons :

C. P. Blackledge, Chairman
R. I. Kaplan
C. F. Trivisonno
J. S. Murrell
W. E. Martin
J, C, Dikeman

This group is assigned the responsibility of studying all aspects of transuranic contamination problems. at GAT, including the following:

1. Developing more effective means of excluding transuranics from plant effluents and further assuring effectiveness of GAT health protection procedures;

2. Developing more sensitive analyses for transuranics

Trace quantities of transuranic elements.are probably being released to Little Beaver Creek; we estimate that the concentrations in water arc below the current analytical detection limits, Since neptunium and plutonium have been-detected in X-701-B, it' will be necessary to develop and implement a routine environmental monitoring program. Furthermore, we must take immediate action to prevent significant quantities of these radioisotopes from entering the environment from X-705.

Since transuranic elements are generally considered to bc both more toxicologically and radiologically hazardous than uranium, it is imperative that we establish health protection measures to ensure that our employees are not inadvertently exposed to, these materials until we can' initiate adequate controls to assure their safety when handling *these* materials.
We need to :

-identify the presence of transuranic elements (isotope , quantity, chemical form, and location) ;
-isolate transuranic elements from personnel and the environment ;
-develop interim handling procedures; and
-develop health protection, environmental: protection, and material control programs.

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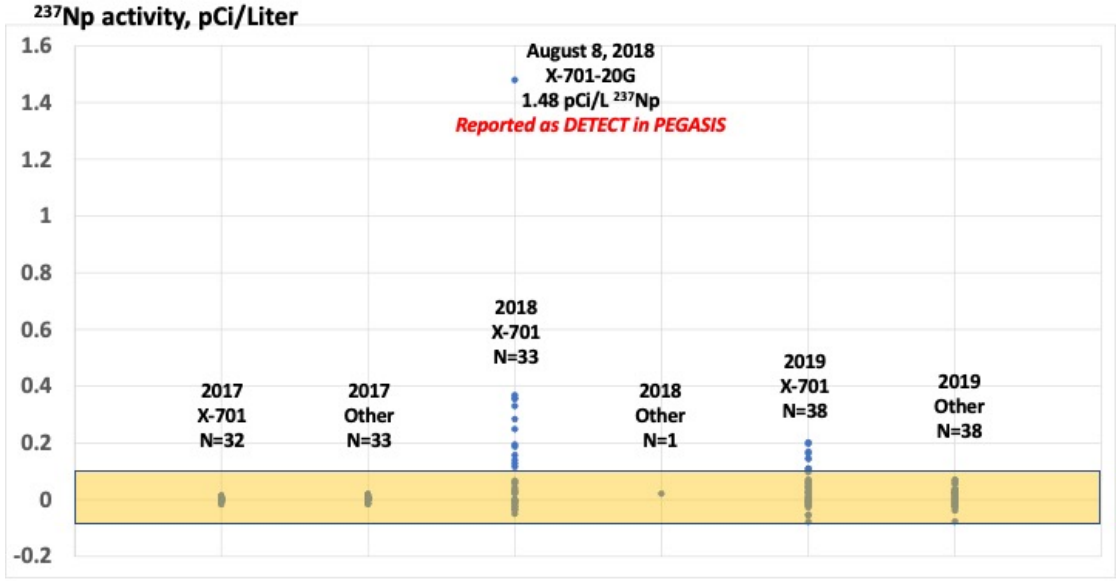
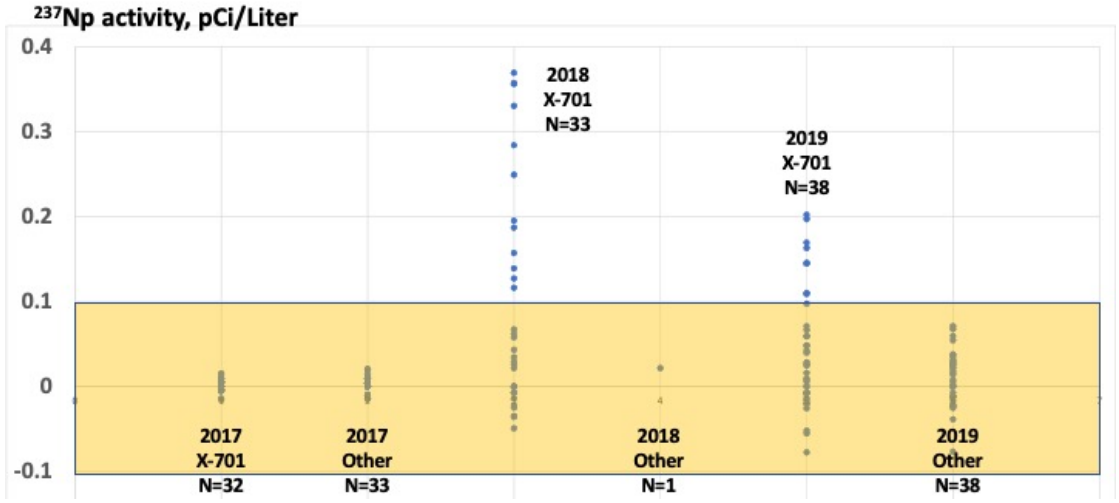
-develop interim handling procedures; and
-develop health protection, environmental: protection, and material control programs.

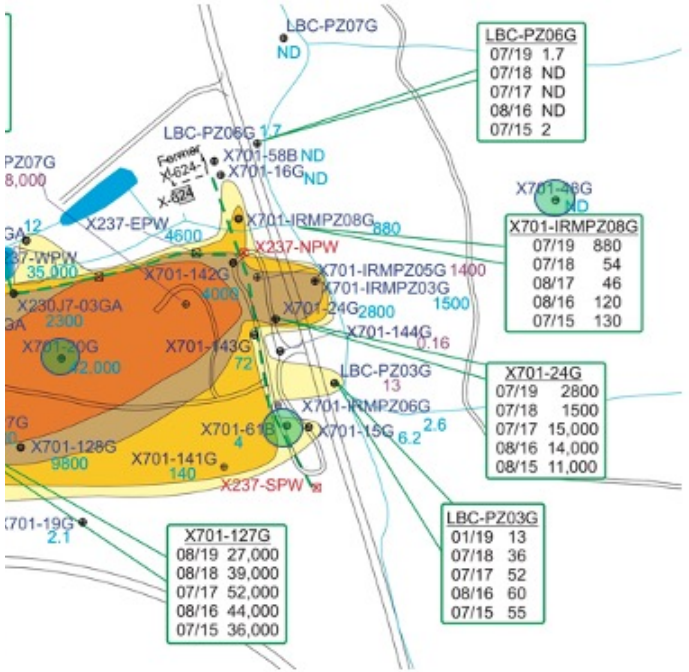
Attachment 2





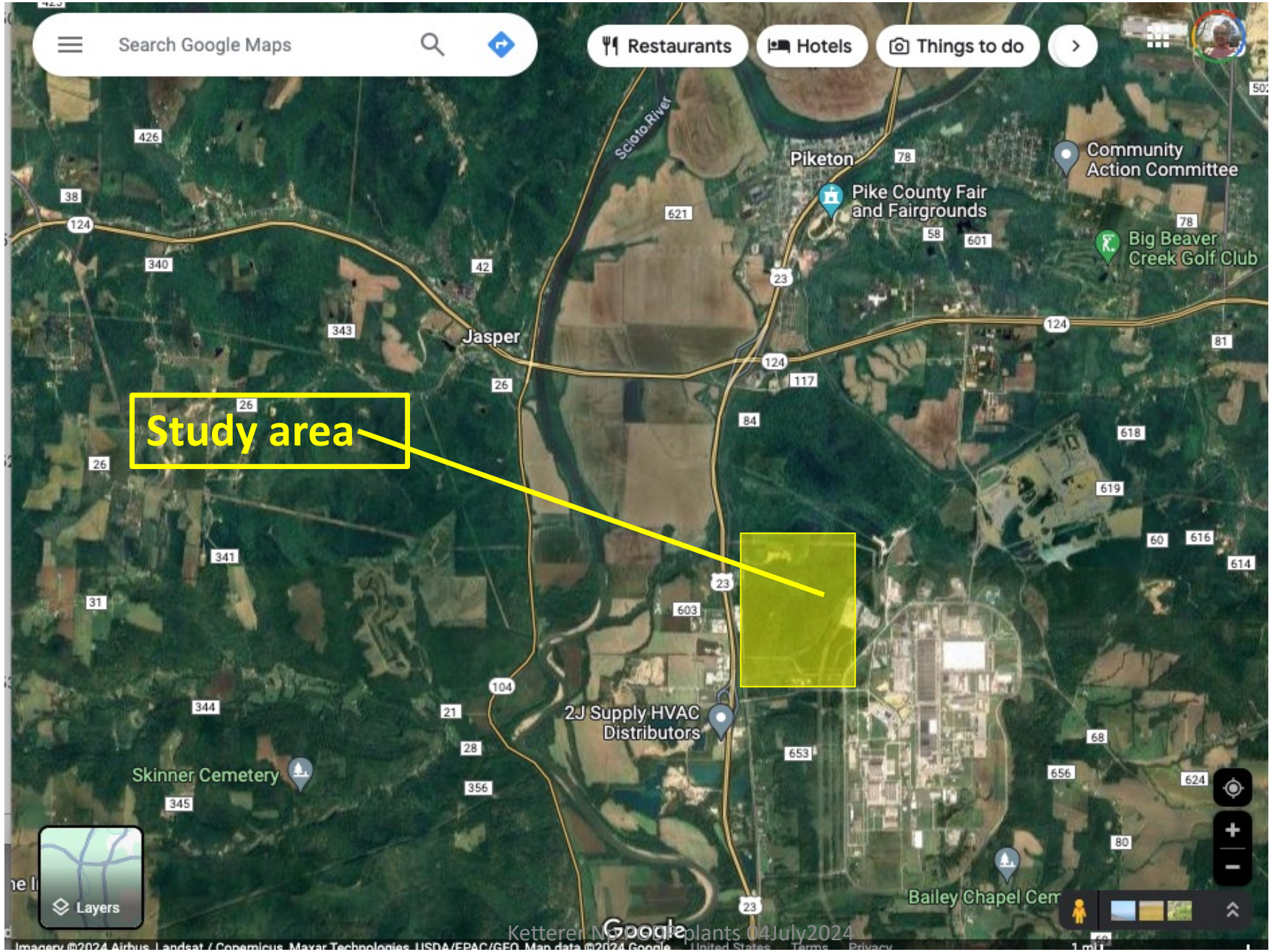
Station Name	Station Type	Date Collected	Media Type Description	Matrix	Results	Units	Chemical Name	Detect Flag
X701-20G	WL	8/8/18 0:00	Groundwater	WATER	1.48	pCi/L	Neptunium-237	DETECT
X701-48G	WL	8/7/18 0:00	Groundwater	WATER	0.369	pCi/L	Neptunium-237	NONDETECT
X701-TC54G	WL	8/13/18 0:00	Groundwater	WATER	0.357	pCi/L	Neptunium-237	NONDETECT
X701-TC10G	WL	8/8/18 0:00	Groundwater	WATER	0.356	pCi/L	Neptunium-237	NONDETECT
X701-TC17G	WL	8/8/18 0:00	Groundwater	WATER	0.33	pCi/L	Neptunium-237	NONDETECT
X701-TC05G	WL	8/13/18 0:00	Groundwater	WATER	0.284	pCi/L	Neptunium-237	NONDETECT
X701-127G	WL	8/8/18 0:00	Groundwater	WATER	0.249	pCi/L	Neptunium-237	NONDETECT
X701-TC01G	WL	8/13/18 0:00	Groundwater	WATER	0.195	pCi/L	Neptunium-237	NONDETECT
X701-TC03G	WL	8/13/18 0:00	Groundwater	WATER	0.187	pCi/L	Neptunium-237	NONDETECT
X701-TC48G	WL	8/8/18 0:00	Groundwater	WATER	0.157	pCi/L	Neptunium-237	NONDETECT
X701-TC22G	WL	8/13/18 0:00	Groundwater	WATER	0.139	pCi/L	Neptunium-237	NONDETECT
X701-66G	WL	8/14/18 0:00	Groundwater	WATER	0.127	pCi/L	Neptunium-237	NONDETECT
X701-TC61G	WL	8/13/18 0:00	Groundwater	WATER	0.116	pCi/L	Neptunium-237	NONDETECT

Station Name	Station Type	Date Collected	Media Type Description	Matrix	Results	Units	Chemical Name	Detect Flag
X701-TC28G	WL	8/14/19 0:00	Groundwater	WATER	0.202	pCi/L	Neptunium-237	NONDETECT
X701-TC10G	WL	8/14/19 0:00	Groundwater	WATER	0.197	pCi/L	Neptunium-237	NONDETECT
X701-20G	WL	8/7/19 0:00	Groundwater	WATER	0.169	pCi/L	Neptunium-237	NONDETECT
X701-TC03G	WL	8/12/19 0:00	Groundwater	WATER	0.163	pCi/L	Neptunium-237	NONDETECT
X701-TC05G	WL	8/12/19 0:00	Groundwater	WATER	0.145	pCi/L	Neptunium-237	NONDETECT
X701-TC61G	WL	8/12/19 0:00	Groundwater	WATER	0.145	pCi/L	Neptunium-237	NONDETECT
X701-TC67G	WL	8/12/19 0:00	Groundwater	WATER	0.11	pCi/L	Neptunium-237	NONDETECT
X701-20G	WL	8/7/19 0:00	Groundwater	WATER	0.109	pCi/L	Neptunium-237	NONDETECT



Examples of locations where ^{237}Np activity exceeds apparent detection threshold of 0.10 pCi/L in 2018 and/or 2019

Attachment 3



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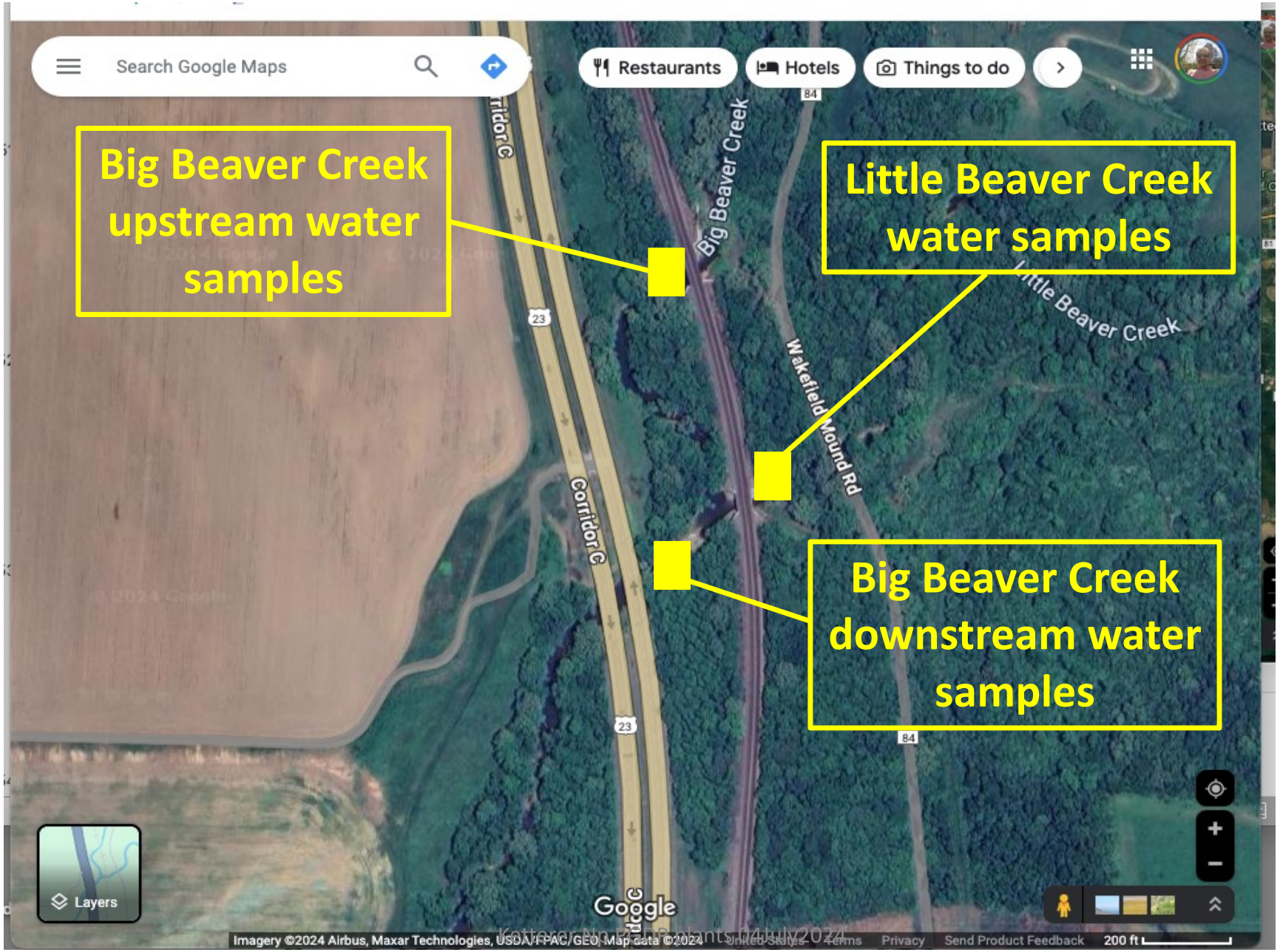
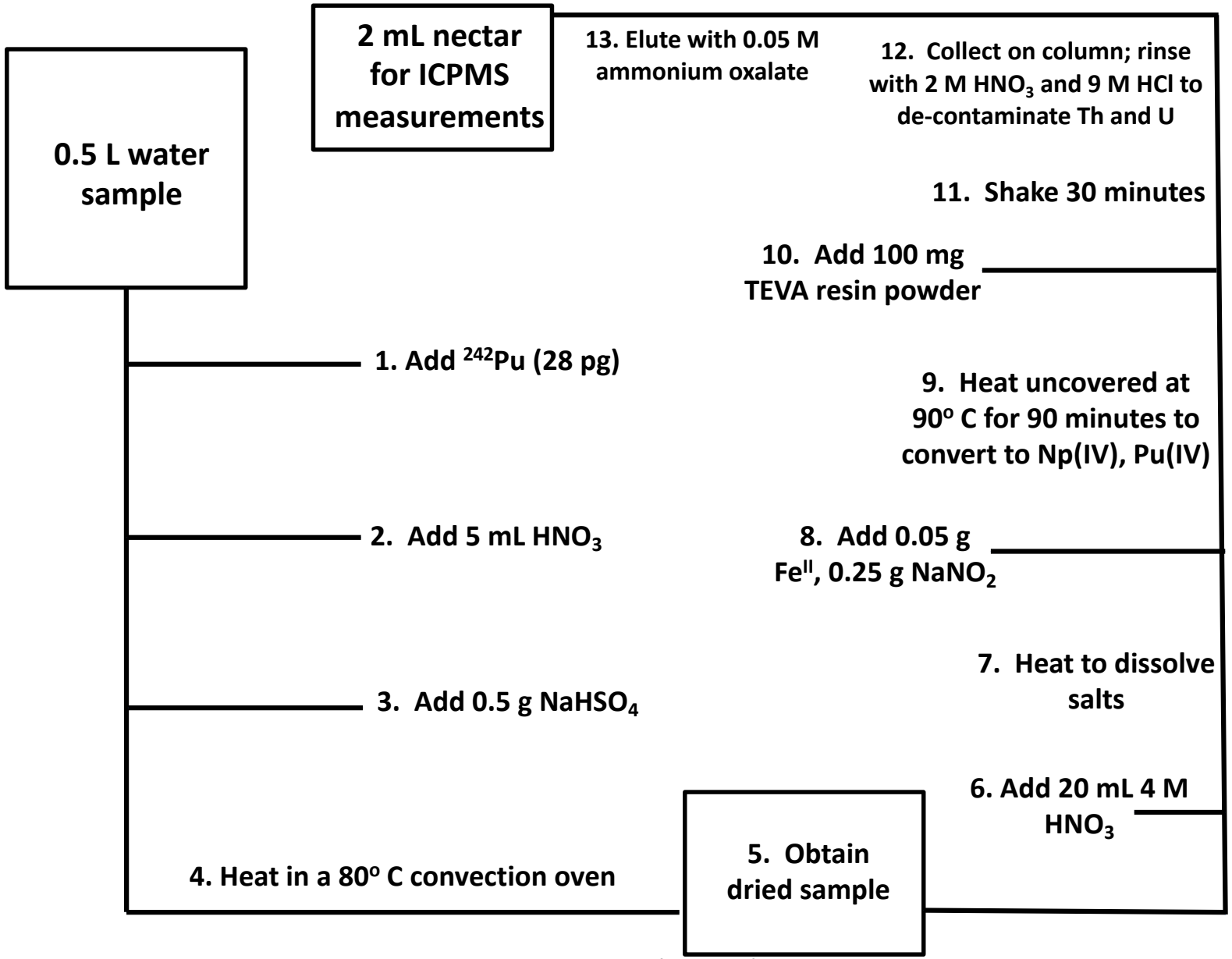


Attachment 4

Attachment 5



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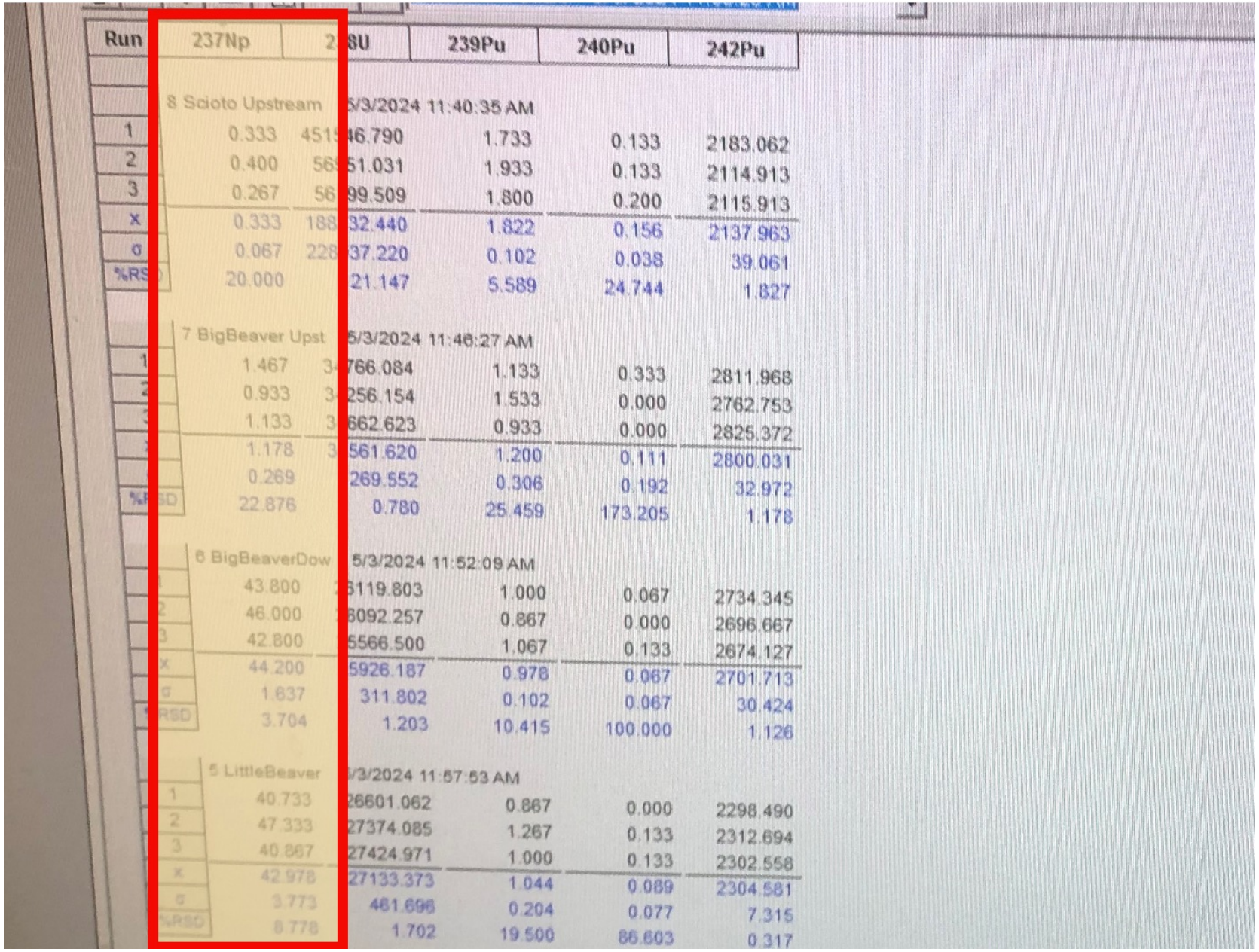

Run	237Np	2	8U	239Pu	240Pu	242Pu
	8 Scioto Upstream		5/3/2024 11:40:35 AM			
1	0.333	451	46.790	1.733	0.133	2183.062
2	0.400	56	51.031	1.933	0.133	2114.913
3	0.267	56	99.509	1.800	0.200	2115.913
x	0.333	188	32.440	1.822	0.156	2137.963
σ	0.067	228	37.220	0.102	0.038	39.061
%RS	20.000		21.147	5.589	24.744	1.827
	7 BigBeaver Upst		5/3/2024 11:46:27 AM			
1	1.467	3	766.084	1.133	0.333	2811.968
2	0.933	3	256.154	1.533	0.000	2762.753
3	1.133	3	662.623	0.933	0.000	2825.372
x	1.178	3	561.620	1.200	0.111	2800.031
σ	0.269		269.552	0.306	0.192	32.972
%RSD	22.876		0.780	25.459	173.205	1.178
	6 BigBeaverDow		5/3/2024 11:52:09 AM			
1	43.800		6119.803	1.000	0.067	2734.345
2	46.000		6092.257	0.867	0.000	2696.667
3	42.800		5566.500	1.067	0.133	2674.127
x	44.200		5926.187	0.978	0.067	2701.713
σ	1.637		311.802	0.102	0.067	30.424
%RSD	3.704		1.203	10.415	100.000	1.126
	5 LittleBeaver		5/3/2024 11:57:53 AM			
1	40.733		26601.062	0.867	0.000	2298.490
2	47.333		27374.085	1.267	0.133	2312.694
3	40.867		27424.971	1.000	0.133	2302.558
x	42.978		27133.373	1.044	0.089	2304.581
σ	3.773		461.696	0.204	0.077	7.315
%RSD	8.778		1.702	19.500	86.603	0.317

Attachment 7

Sample/description	^{237}Np (pg/g)	$^{239+240}$Pu (Bq/kg)	^{237}Np/^{239}Pu	^{240}Pu/^{239}Pu
Fine-grained sediment + moss	8.0 ± 0.1[a]	0.19 ± 0.02	142 ± 13	0.111 ± 0.021
Fine-grained sediment + moss	12.3 ± 0.1	0.26 ± 0.02	146 ± 7	0.081 ± 0.015
Fine-grained sediment	15.5 ± 0.1	0.27 ± 0.01	170 ± 7	0.078 ± 0.017
Fine-grained sediment	21.3 ± 0.1	0.24 ± 0.02	298 ± 23	0.123 ± 0.023
Bank sediments, Big Beaver Creek	8.2 ± 0.1	0.16 ± 0.01	161 ± 4	0.096 ± 0.020
Bank sediments, Big Beaver Creek	9.9 ± 0.1	0.17 ± 0.03	190 ± 29	0.099 ± 0.007
Humic soil, floodplain	14.2 ± 0.1	0.75 ± 0.03	66 ± 4	0.133 ± 0.011
Streambank grass sub-sample #1[a]	1.79 ± 0.02	0.033 ± 0.007	159 ± 13	0.083 ± 0.035
Streambank grass sub-sample #2	2.12 ± 0.02	0.036 ± 0.003	183 ± 14	0.088 ± 0.026
Streambank grass sub-sample #3	2.05 ± 0.02	0.031 ± 0.004	194 ± 26	0.067 ± 0.011
Streambank grass sub-sample #4	2.22 ± 0.05	0.036 ± 0.009	205 ± 30	0.090 ± 0.043
Urseren control soil (fallout Np, Pu)	0.120 ± 0.002	1.00 ± 0.02	0.47 ± 0.01	0.193 ± 0.005

[a]All uncertainties are ± one experimental standard deviation of 3 to 6 sequential measurements. [b]Concentrations of ^{237}Np and $^{239+240}$Pu were measured by leaching dry-ashed samples, but are reported are on the basis of dry plant mass.

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United States Senate

WASHINGTON, DC 20510-3503

JUDICIARY
Chairman, Subcommittee on Antitrust
HEALTH, EDUCATION, LABOR, AND PENSIONS
Chairman, Subcommittee on Aging
INTELLIGENCE

September 16, 1999

The Honorable William Richardson
Secretary
Department of Energy
1000 Independence Ave.
Washington, DC 20585

Dear Mr. Secretary:

We have been following the recent revelations concerning worker exposure to plutonium and the type of plutonium handled at the Portsmouth Gaseous Diffusion Plant (GDP). The revelations are greatly disturbing to us and the many men and women who may be affected by the exposure to this extremely radioactive material.

We are concerned by the Department's failure to assess the situation and respond in a timely manner. For instance, the Department had, until recently, maintained that the Portsmouth GDP handled only diluted plutonium. This week, however, the Department uncovered information in its own reports, one dating back to1985 that undiluted plutonium was shipped directly to Portsmouth for handling. The Department and the workforce should have been aware of the situation. Once the story was made public, the Department failed to fully investigate the exposure records or the flow of plutonium into Portsmouth. The residents of Portsmouth who may have come into contact with the plutonium deserve to know what material was handled, how much was handled, when handling occurred, and when the Department intends to have those answers.

We understand you plan to unveil a pilot program to compensate certain employees at the GDP in Paducah, KY. The problem of unknown worker exposure to plutonium found at Paducah also exists at Portsmouth. Therefore, we strongly recommend that any program designed to compensate workers who have developed certain cancers related to radiation must include the Portsmouth workers who unknowingly handled plutonium.

We look forward to working with you to ensure that the current and former workers at the Portsmouth GDP are adequately protected. We invite you to contact our offices so that we may be fully informed on this serious situation.

Very respectfully yours,

Mike DeWine

MIKE DeWINE
UNITED STATES SENATOR

George V. Voinovich

GEORGE V. VOINOVICH
UNITED STATES SENATOR

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Appendix 9

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July 17, 2024

Dorothy Brohard, Administrator
Pike Christian Academy
400 Clough Street
Waverly, OH 45690
Via regular first-class and certified U.S. mail

RE: PCA's intended purchase of Zahn's Corner Middle School campus

Dear Ms. Brohard:

I write as legal counsel for the statewide Ohio Nuclear-Free Network (ONFN). On behalf of ONFN's members in Pike and surrounding counties, we ask that Pike Christian Academy terminate its plans to acquire and reutilize the Zahn's Corner Middle School because, as a school, it would pose genuine health risks to staff and children. Zahn's is radiologically contaminated and, sitting 1.5 miles from the perimeter fence of the Portsmouth Gaseous Diffusion Plant complex (PORTS), the site will become even more contaminated from ongoing and anticipated activities at PORTS. The U.S. Department of Energy (DOE) fixed the federal government's liability for ruination of the school as a learning center when it compensated Pike County to close and replace the school. Zahn's must be demolished and the site remediated to the extent that is possible, and it must never be used as a school again.

Over decades, and particularly during recent demolition of major structures at PORTS, large volumes of radioactive elements have been emitted into air and water which have traveled far offsite. An air monitor 14 miles from the plant[1] has picked up particulates from PORTS. The DOE reported in 2017 that trace amounts of radioactive neptunium-237 were detected[2] in an air monitoring station located across from the Zahn's School grounds. Later, americium-241 showed up.[3] Both can cause bone cancer as well as damage to the lungs, liver, kidneys and thyroid.

[1] https://huntingtonnewsnetwork.com/?p=1372
[2] https://www.energy.gov/sites/default/files/2019/07/f65/Sampling%20Analysis%20Report%20Zahns%20Corner%20Middle%20School.pdf
[3] https://www.nea.org/nea-today/all-news-articles/radioactive-materials-close-ohio-school-nearly-year

Over the past decade, multiple residents in the vicinity of PORTS link their health problems to PORTS. At one point five child cancer cases[4] were identified in the Piketon area; three of the children died. Pike County General Health District and the Scioto Valley-Piketon Area Council of Governments publicly discourage area residents or visitors from eating produce[5] from in-ground gardens within six miles of PORTS. Plutonium and technetium have been found in soil samples as far as Scioto County.[6] Waverly, and Lake White, as well as areas within six miles of PORTS.

In 2019, extensive scientific investigative work undertaken by Dr. Michael Ketterer, emeritus chemistry professor from Northern Arizona University, including dust samples taken from the interior of Zahn's School, confirmed the presence inside of high-enriched uranium isotopes chemically identified as emissions from PORTS.[7] Within a six-mile radius of PORTS there have been hundreds of verified instances of americium-241, neptunium-237, plutonium-238, plutonium-239, plutonium-240, technetium-99, uranium-233, uranium-234, uranium-235, uranium-236 and uranium-238.

Earlier this week, on July 15, 2024, Dr. Ketterer released a new study where he had concluded that PORTS transuranic isotopes have been concentrating in plant matter[8] for years in the upland areas alongside the Scioto River and its tributaries, Little Beaver and Big Beaver Creeks downstream from the PORTS water drainage outfall.

The Scioto Valley School District board, in a sensible decision, permanently closed Zahn's School in 2019 out of concerns that children might be suffering adverse health effects from the radioactive contamination of the school and its grounds. The school board formally stated that "the health and safety of staff and students is of paramount importance."[9]

The historic emissions of various radioactive elements will take from thousands to literally millions of years to decay to harmless background levels. But ongoing and planned new activities at PORTS will add even more radioactivity to the air, land and water around the facility:

> The demolition of gargantuan industrial buildings laden with radioactive contaminants will continue for years if not decades, lofting radiation-bearing fugitive dust into the air.

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[4] *Id.*
[5] https://sciotovalleyguardian.com/2023/10/13/nuclear-resurgence-in-pike-county-a-dangerous-gamble-or-key-to-economic-revival/
[6] *Id.*
[7] https://drive.google.com/file/d/1aB1tGb_miJVz-UH2uCjKxgES8Dw2sXIV/view
[8] https://local12.com/news/investigates/new-testing-reveals-radioactive-elements-plants-near-cold-war-facility-southwest-ohio-piketon-fallout-duane-pohlman-cincinnati-portsmouth-gaseous-diffusion-plant
[9] https://www.piketon.k12.oh.us/article/1671278

> A depleted uranium processing facility at PORTS has recently opened a new depleted uranium processing line to purify depleted uranium for use in nuclear weapons,[10] which entails a dirty and dangerous industrial method.

> Centrus Corporation is currently using centrifuges to enrich uranium for nuclear reactor fuel[11] at PORTS to nearly a 20% concentration of uranium-235, which process inevitably emits airborne radioisotopes.

> Two experimental nuclear reactors[12] are planned to be built at PORTS by 2030 by a firm named Oklo.

> Oklo is also thinking about applying to license a one-of-a-kind nuclear fuel "recycling" plant[13] to reclaim reusable radioisotopes from the spent nuclear fuel produced by the two planned reactors. Those reactors will generate spent nuclear fuel that can be "recycled." Nuclear fuel "recycling," also called reprocessing, is a dirty and dangerous activity that has been undertaken commercially only once in the U.S., in West Valley, New York,[14] where the plant operated briefly, contaminated the watershed[15] by emptying into Lake Erie, and poisoned workers. The reprocessing plant might be built at PORTS.

With so much evidence of past and future threats to the health of those around the PORTS complex, it is important to consider the legal responsibility the board and managers of Pike Christian Academy would owe to the staff and students of a reopened Zahn's School. As a party acting *in loco parentis* of students, Pike Christian Academy might in the future be viewed as criminally liable for re-establishing a school there: it could be seen as causing a "substantial risk to the health or safety" of children attending school there by "violating a duty of care, protection or support," the standard stated in Ohio's child endangering statute, O.R.C. § 2919.22(A). Violations can be prosecuted as third-degree felonies.

Another state law, O.R.C. § 2927.24(B)(2), states that "(No person shall) Knowingly . . . expose one or more persons to any . . . radioactive substance with the intent to cause, or create a risk of, death or serious physical harm to any person." Obviously, no one running Pike Christian Academy has any intention of causing physical harm to staff or students. But in light of the evidence of radiological dangers from past, present and future projects at PORTS, if diseases befall students, the Academy's intentions might be viewed differently in the future as reckless or worse. Violations of § 2927.24(B)(2) are a first degree felony.

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[10] https://www.federalregister.gov/documents/2020/01/23/2020-01074/amended-record-of-decision-for-the-installation-and-operation-of-a-depleted-uranium-hexafluoride
[11] https://www.centrusenergy.com/what-we-do/nuclear-fuel/high-assay-low-enriched-uranium/
[12] https://www.powermag.com/siemens-energy-poised-to-partner-with-oklo-on-aurora-nuclear-reactor/
[13] https://www.powermag.com/oklo-readying-to-deploy-commercial-scale-nuclear-fuel-recycling-facility/
[14] https://www.nyserda.ny.gov/All-Programs/West-Valley/Fuel-Reprocessing-History
[15] https://www.nirs.org/campaigns/west-valley/

We make our plea to you with positive, caring intentions. We know that Pike Christian Academy is made up of caring neighbors who look out for their students and staff. Ohio Nuclear Free Network's members respectfully submit that what's best for the community's children, who are our future, is that the reopening of Zahn's School should have no place in that future.

Sincerely,

/s/ Terry J. Lodge
Terry J. Lodge

Joel Bradburne, Manager
Portsmouth/Paducah Project Office (PPPO)
U.S. Department of Energy
Via email only to joel.bradburne@pppo.gov

Eric Roberts, Site-Specific Advisory Board (SSAB) coordinator
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Matt Brewster, Commissioner
Pike County General Health District
Via email only to mbrewster@pike-health.org

Michael A. Davis, Esq.
Pike County Prosecutor
Via email only to rob.mike.davis@pikecounty.oh.gov

Appendix 10

The Ohio Nuclear Free Network
316 North Michigan Street, Suite 520
Toledo, OH 43604 onfn.org

July 22, 2024

TO:
The U.S. Department of Energy, PPPO
Members of the Portsmouth Site Specific Advisory Board
The Piketon Community and members of the public

RE: *US SENATORS URGE NO FEDERAL SUPPORT FOR NUCLEAR FUEL REPROCESSING*

Oklo, Inc. and the U.S. Department of Energy (DOE) are proposing to build two new nuclear reactors at the Portsmouth Nuclear Site near Piketon, Ohio (PORTS).

Oklo is also talking about receiving **spent (used) nuclear fuel, which is also defined as high-level radioactive waste,** and reprocessing it to separate out the plutonium and enriched uranium for future use. Oklo has not indicated where this proposed reprocessing might take place, but PORTS is a top candidate.

Reprocessing, often referred to as "recycling" to give it a happy face, involves taking high-level reactor waste in solid form and adding acids to turn it into a liquid. Imagine how much more difficult it then becomes to contain a radioactive liquid, which also has an increased volume. Where and how will the reprocessing waste be stored? Oklo has no answer for this.

Attorney Terry Lodge explains that reprocessing spent nuclear fuel is dangerous and reverses 50 years of Executive Branch rejection of reprocessing because of the risks of espionage and weapons trafficking. He notes Oklo's oversimplification of reprocessing in this ad, where shockingly Oklo talks about **"recycling" spent fuel from the entire present U.S. reactor fleet** https://oklo.com/fuel-recycling/default.aspx. **Does Piketon, or the state of Ohio, want this nuclear waste brought here? That would mean tens of thousands of shipments over a period of many years.** What rural community would be left? And as Senators Merkley and Markey note, reprocessing would seem to violate a formal **Biden policy memorandum** aimed at countering rogue nuclear weapons development and associated trafficking. See their letter below.

July 17, 2024: ***MERKLEY, MARKEY URGE NO FEDERAL SUPPORT FOR COMMERCIAL NUCLEAR FUEL REPROCESSING PLANTS***

Washington, D.C. – Today, Oregon's U.S. Senator Jeff Merkley and Massachusetts' U.S. Senator Edward J. Markey, Senate co-chairs of the Congressional Nuclear Weapons and Arms Control Working Group, expressed their concern about companies seeking to build commercial nuclear fuel reprocessing plants in the United States.

The Senators urge U.S. Secretary of Energy Jennifer Granholm and U.S. Nuclear Regulatory Commission Chair Christopher Hanson not to fund proposals to construct nuclear processing plants that would produce and accumulate weapon-usable nuclear material. The Senators note the risks facing the U.S. if the proposals were to be funded, including undermining both our nation's nuclear nonproliferation policy and our national security.

"The reprocessing of plutonium that would be undertaken at these plants would create security and proliferation risks that far outweigh any ostensible energy benefits… Furthermore, such projects

would be vulnerable to attacks by nefarious actors who seek to exploit the infrastructure and nuclear fuel at these plants to threaten U.S. nationals and interests," wrote the Senators.
"The U.S. government must take concrete steps to prevent the construction of reprocessing plants that have been proposed or any similar facility… The construction of facilities that can produce weapons-grade nuclear material undermines both U.S. nonproliferation policy and American national security," the letter concludes.

Full text of the letter can be found by clicking **here** and follows below:

Dear Secretary Granholm and Chair Hanson:

We write to express our deep alarm about public reports that the Department of Energy is considering funding proposals to support building commercial nuclear fuel reprocessing plants in the United States. These plants would violate our national nuclear security policy, including the Administration's own National Security Memorandum-19 ("To Counter Weapons of Mass Destruction Terrorism and Advance Nuclear and Radioactive Material Security"), which states, "it is the policy of the United States to […] refrain from the use of weapons-usable nuclear material in new civil reactors or for other civil purposes" and to "focus civil nuclear research and development on approaches that avoid producing and accumulating weapons-usable nuclear material."

The reprocessing of plutonium that would be undertaken at these plants would create security and proliferation risks that far outweigh any ostensible energy benefits. For instance, U.S. adversaries could cite this precedent to build their own commercial plants, which have the potential to produce enough plutonium to be diverted to the development of nuclear weapons. Furthermore, such projects would be vulnerable to attacks by nefarious actors who seek to exploit the infrastructure and nuclear fuel at these plants to threaten U.S. nationals and interests.

As you know, U.S. nuclear power plants do not require or utilize weapons-usable fuel, which is why President Gerald R. Ford declared a moratorium on civilian reprocessing plants in 1976. Since then, no civilian reprocessing plant has operated in the United States, strengthening U.S. diplomatic efforts to prevent other nations from building or running reprocessing facilities that could produce weapons-usable fuel. The U.S. government should not provide federal financial support for these plants, including in the form of loan guarantees. The Administration should also inform the Nuclear Regulatory Commission (NRC) that such plants are "inimical to the common defense and security," pursuant to the Atomic Energy Act of 1954. The NRC has a statutory obligation to avoid issuing licenses for commercial production of nuclear material that would jeopardize our national security— civilian reprocessing of weapons-grade plutonium clearly meets that standard by undermining our nuclear security policy.

Ultimately, the U.S. government must take concrete steps to prevent the construction of reprocessing plants that have been proposed or any similar facility, through either license denials or a refusal to provide these dangerous facilities with public-backed loans or other financial support. The construction of facilities that can produce weapons-grade nuclear material undermines both U.S. nonproliferation policy and American national security.

Thank you for your attention to this important issue. (signed by the senators)
……

Patricia Marida, coordinator
The Ohio Nuclear Free Network
ONFN.org