1. PFAS sampling of the shallow groundwater at NRL-CBD and the surrounding residential areas has identified PFAS upgradient and side gradient of Site 10.
    a. How do you explain PFAS detections upgradient and side gradient of Site 10?
    b. Is there a problem with the shallow groundwater flow models?
    c. Are there multiple PFAS source areas?
    d. Is PFAS migrating in a different direction than the shallow groundwater flow?
    e. Why hasn't this warranted an expanded off-base drinking water investigation?

    a. It is possible that there could be off-site sources of PFAS, resulting in the low levels detected in the upgradient monitoring wells. Also note that none of the side- or up-gradient wells had PFOA and PFOS levels near the EPA Health Advisory Level for drinking water. The only ones that did were the wells inside the Site 10 boundary, immediately around the boundary, and hydraulically downgradient.
    b. Groundwater modeling, if needed, will be done as part of the Remedial Investigation (RI).
    c. The known source area currently is the fire testing area.
    d. Based on the results and groundwater flow direction, it does not appear to do so.
    e. Based on known groundwater flow direction, the zone of potential impact was determined, and off-site drinking water wells were sampled. Of those 42 wells sampled, three had detects, none of which approached the Health Advisory Level of 70 ppt of PFAS (which applies to PFOS + PFOA). The data can be found in this report, available online at this link:
    f. https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/PFAS-Reading-Room/. https://www.navfac.navy.mil/niris/WASHINGTON/CHESAPEAKE_BEACH_NRL/N31260_000172.pdf
2. MDE has stated that the shallow water table is underlain by a thick clay layer (i.e., Calvert confining unit) that was believed to be laterally continuous and fully confining. In 2018, off-base sampling detected PFAS compounds in residential wells screened in the Piney Point Aquifer. In 2020, on-base sampling detected PFAS compounds in 4 out of 4 wells screened in the Piney Point Aquifer.
    a. Given the PFAS detections in the Piney Point Aquifer, does MDE still believe the Calvert confining unit is laterally continuous and fully confining?
    b. How did PFAS enter the Piney Point Aquifer?
    c. Does MDE believe the wells are acting as a pathway for PFAS to move from the shallow aquifer to the Piney Point aquifer?
    d. Have the casings on the older wells at NRL-CBD been inspected for holes?

a. Yes, based on field observations, current on-site and older geologic logs of the area, and geologic maps, this appears to be true. Also, based on the private well data, there are no apparent expansive "plumes" in the Piney Point; only 3 of the 42 wells tested showed any PFAS detections. If the Calvert were not acting as an aquitard, one would expect that there would be more consistent or widespread detections in the Piney Point.

b. Of the four detections in the four deep on-base wells, note that no compounds were detected above the Health Advisory Levels for PFOA and PFOS. We are continuing to investigate to confirm the existence and extent of PFAS in the Piney Point. Based on groundwater elevation data in the shallow wells as compared to the deep wells, it does not appear that there is the possibility of movement between the aquifers.
c. Care is taken not to cross-contaminate aquifers during well installation. However, activities conducted during the RI may look at that possibility, if necessary.
d. Not as of yet.

3. Site 10, formerly called AOC A, is a fire testing area located near the center of NRL-CBD. The site has been used since 1968 to test the effectiveness of aqueous film-forming foam (AFFF) on extinguishing fires started with various fuel sources. For more than 20 years, wastewater and chemicals from these tests were drained into a pit for disposal and allowed to slowly drain into the soil. Site investigations confirmed the presence of PFAS in on-base and off-base groundwater as a result of testing fire-extinguishing agents and the associated disposal practices. The potential for human health and environmental risks related to PFAS have been known for decades but the United States Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE) have not established protective regulations. In May 2016, the EPA released lifetime health advisory levels for two PFAS, specifically perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). The EPA health advisory level for lifetime exposure is 70 parts per trillion (ppt) for PFOS and 70 ppt for PFOA. When both PFOS and PFOA are found in drinking water, the combined concentrations should not exceed 70 ppt. The health advisory indicates that exposure above these levels may result in adverse health effects.
    a. PFAS is not a listed hazardous waste. Please clarify how the waste from Site 10 is handled and managed? See May 18 RAB meeting notes for a description of how material is currently managed.
    b. Is the waste from Site 10 managed as hazardous waste due to the toxicity characteristic, if concentrations of PFOS, PFOA or the combined total are above 70 ppt? No. Note that EPA issued Interim Guidance for public comment on PFAS disposal in December 2020 and EPA is currently reviewing comments on the Interim Guidance. Additionally the 70 ppt Health Advisory Level is for drinking water sources and does not determine whether waste would be regulated as hazardous.

4. Site investigations have confirmed the presence of PFAS in streams located north and south of Site 10. These streams are transporting PFAS onto private property and both of these streams ultimately discharge PFAS to the Chesapeake Bay.
    a. Will MDE require the Navy to implement an interim action to address ongoing releases of PFAS to the Chesapeake bay at NRL-CBD?
    b. PFAS has been detected in groundwater west of Site 10. Will streams to the west of Site 10 be tested for PFAS?

c. Are the synergistic effects of the PFAS and other chemicals considered when the human and ecological exposure pathways are evaluated?
d. Does the MDE have a seasoned risk assessor (i.e., Mark Mank) involved in the project?

a. In response to MDE's request, the Navy has proposed to conduct an interim measure study to investigate options for addressing the release to the surface water. Based on the results of that study, a determination will be made on what measures will be implemented, if any are found to be plausible.
b. The current focus of our efforts is in the source area, since that is the area that will have to be addressed first. The goal ultimately is to remediate or remove the source so that PFAS concentrations in nearby various media are greatly reduced. Groundwater elevation data and topography suggest that those streams are not downgradient from Site 10.
c. To the extent that there is sound science and a scientifically accepted method for considering such effects, MDE would consider them.
d. Yes

5. Site investigations have confirmed the presence of PFAS in the stream located south of Site 10. PFAS detections in the upstream areas are consistent with the Navy's theory that PFAS is being discharged to the stream from groundwater. However, the PFOS concentrations approximately 1000 feet downstream increase by nearly 1000%. This downstream spike in PFOS concentration is not consistent with the Navy's theory that PFAS is being discharged to the stream from groundwater. The nearly 1000% increase in PFOS occurs where the Navy's sewage treatment plant is discharging to the stream. The data indicates that the sewage treatment plant is discharging extremely high levels of PFOS into the stream. The contaminated water in this stream is then discharged directly into the Chesapeake Bay, less than 1000ft downstream.
    a. Has MDE initiated any investigation to assess whether the sewage treatment plant is actively discharging extremely high levels of PFOS into the stream?
    b. Will MDE require the Navy to implement an interim action to reduce imminent risks to human health and the environment, while long-term field investigations are being conducted or until a final remedy is selected?
    c. Will MDE require the Navy to implement an interim action to address the ongoing discharge of PFAS from the sewage treatment plant to this stream?
    d. Will MDE require the Navy to implement an interim action to address the ongoing discharge of PFAS to the Chesapeake Bay?
    e. Does MDE enforce regulations to prohibit the discharge of hazardous substances to streams?
    f. Does MDE enforce regulations to prohibit the discharge of hazardous substances to the Chesapeake Bay?
    g. Does MDE enforce regulations to prohibit the discharge of hazardous substances to the Critical Area?

h. Does MDE enforce regulations to prohibit the discharge of any waste to streams in Maryland?
i. Does MDE enforce regulations to prohibit the discharge of any waste to the Chesapeake Bay?
j. Does MDE enforce regulations to prohibit the discharge of any waste to the Critical Area?
k. Does MDE enforce regulations to prohibit the discharge of PFAS to streams in Maryland?
l. Does MDE enforce regulations to prohibit the discharge of PFAS to the Chesapeake Bay?
m. Does MDE enforce regulations to prohibit the discharge of PFAS to the Critical Area?
n. There are locations across the United States that are working to identify solutions to address PFAS waste disposal. Does MDE enforce regulations that would prohibit others from bringing PFAS waste to Maryland and disposing of it in the Chesapeake Bay?
o. What types of waste does MDE deem acceptable for an individual to discharge to Maryland streams?
p. What types of waste does MDE deem acceptable for an individual to discharge to the Chesapeake Bay?
q. What types of waste does MDE deem acceptable for an individual to discharge to the Critical Area?
r. What action should a Maryland resident take if they want a neighboring property owner to stop discharging toxic waste to streams?
s. What action should a Maryland resident take if they want a neighboring property owner to stop discharging toxic waste to the Chesapeake Bay?
t. What action should a Maryland resident take if they want a neighboring property owner to stop discharging toxic waste to the Critical Area?

a. The possibility of a source there has been discussed and MDE will be working with the Navy to conduct additional sampling to determine what is happening relative to the sewage treatment plant.
b. The Navy has proposed to conduct an interim measure study to investigate options for addressing the release to the surface water.
c. See response to 5a.
d. Further sampling during the RI will be needed to determine whether and to what extent there is an impact to the Bay from NRL, and what appropriate actions can be taken (see response to 5b).
e. though t. Under a variety of statutory and regulatory authorities, MDE regulates and provides oversight for the discharge of pollutants to waters of the state, the cleanup of hazardous substances, and the proper management and disposal of solid waste. While PFAS are not currently regulated as hazardous substances, MDE is considering how it can use its existing broad authorities to enforce water quality criteria and regulate

discharges of PFAS. MDE is also undertaking a number of initiatives focused specifically on better understanding and managing the risk from PFAS in the state (more information here: https://mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx)

At the NRL-CBD site specifically, MDE is overseeing the investigation and remediation of PFAS contamination from historic uses of AFFF, under its CERCLA and state Controlled Hazardous Substances authorities. This oversight includes requiring the Navy to fully investigate PFAS contamination on site and the extent and risks of any impacts off site. This process included the SI and will continue with further investigation during the RI, including additional investigation of the potential off site surface water impacts to streams and the Chesapeake Bay and the completion of risk assessments. Additionally, as described elsewhere, MDE has requested and the Navy has proposed to evaluate whether there are interim measures that would be viable to address PFAS in surface water leaving the site.

6. Site investigations have confirmed the presence of PFAS in streams located north and south of Site 10. Both streams are transporting PFAS from the base to private property.
    a. Will MDE require the Navy to implement an interim action to reduce imminent risks to human health and the environment, while long-term field investigations are being conducted or until a final remedy is selected?
    b. Will MDE require the Navy to implement an interim action to address ongoing releases of PFAS to adjacent properties?
    c. Does MDE enforce regulations to prohibit the discharge of hazardous substances to private property?
    d. Does MDE enforce regulations to prohibit the discharge of hazardous substances to farms in Maryland?
    e. Does MDE enforce regulations to prohibit the discharge of any waste to private property in Maryland?
    f. Does MDE enforce regulations to prohibit the discharge of any waste to farms in Maryland?
    g. Does MDE enforce regulations to prohibit the discharge of PFAS waste to private property in Maryland?
    h. Does MDE enforce regulations to prohibit the discharge of PFAS waste to farms in Maryland?
    i. What types of waste does MDE deem acceptable for an individual to dispose of on private property in Maryland?
    j. What types of waste does MDE deem acceptable for an individual to dispose of on farms in Maryland?
    k. What action should a Maryland resident take if they want a neighboring property owner to stop using both properties for waste disposal?

l. If a stream is transporting PFAS from the base and onto private property, can the property owner dam the stream to prevent additional contamination of their property? Or, does MDE enforce regulations that would prevent a property owner from protecting themselves and their property?
m. If MDE will continue to allow PFAS to migrate off-base and onto private property, can the property owner pump the contaminated water back to the NRL-CBD property? Or, does MDE enforce regulations that would prevent a property owner from protecting themselves and their property.

a. See response to question 4a.
b. See response to question 4a.
c. - m. See responses to question 5.

7. The Maryland Department of Environment is responsible for regulatory oversight of the Navy's Environmental Restoration Program at NRL CBD.
   a. Please provide the names, titles, and qualifications of MDE employees who have an active role with the regulatory oversight of the Navy's Environmental Restoration Program at NRL CBD?
   b. Why isn't the US EPA involved in the regulatory oversight of the Navy's Environmental Restoration Program at NRL CBD?

   a. Peggy Williams is the Project Manager for this site. Ira May is the Chief of the Federal Facilities Assessment and Remediation Division. Both are geologists. Mark Mank is a toxicologist with MDE's Land Restoration Program.
   b. After the Superfund Amendments Act in 1986, the Federal Facility sites were scored to determine whether the sites should be placed on the EPA's National Priority List (NPL). NRL-CBD did not score high enough to be put on the NPL. For NPL sites, EPA provides oversight. For sites that do not score high enough to be designated as NPL, the State provides oversight.

8. PFAS compounds are known to be harmful to human health but these compounds are not regulated by MDE. MDE may be waiting for the EPA to regulate these substances. Most people would choose not to be exposed to PFAS while we wait to determine the safe exposure levels. If MDE will continue to allow PFAS to migrate off-base, what can residents do to protect themselves? As discussed above, MDE is working to ensure that the Navy fully investigates PFAS impacts from CBD-NRL and takes any appropriate actions to protect human health and the environment. On MDE's request, the Navy has also proposed to conduct an interim measure study this year to evaluate whether there are potential interim measures to address the release of PFAS to surface waters. Residents can limit their exposure in their own homes by eliminating the use of PFAS-containing products such as Scotch-Guard, non-stick pans, certain flosses, fabric softeners, water-repellents, certain cosmetics, and avoiding fast food in PFAS-coated food containers and wrappers, etc. This FAQ by the Agency for Toxic Substances and

Disease Registry lists ways to reduce PFAS exposure:
https://www.atsdr.cdc.gov/pfas/resources/pfas-faqs.html

9. MDE has acknowledged that many household items contain PFAS.
    a. Does MDE enforce regulations to regulate the disposal of household items that contain PFAS?
    b. Does MDE enforce regulations to prohibit the disposal of household items that contain PFAS, in the nearest stream?
    c. Does MDE enforce regulations to prohibit the disposal of household items that contain PFAS, in the Chesapeake Bay?
    d. Does MDE enforce regulations to prohibit the disposal of household items that contain PFAS, at NRL-CBD?
    e. Does MDE enforce regulations to prohibit the disposal of household items that contain PFAS, on private property in Maryland?
    f. Does MDE enforce regulations to prohibit the disposal of household items that contain PFAS, on farms in Maryland?

    a. through f. MDE does not regulate these household items.

10. I reviewed the PFAS information and links on MDE's webpage (https://mde.maryland.gov/programs/Water/water_supply/Pages/PFAS_Home.aspx). In regards to NRL-CBD, the Summary of Maryland's PFAS Scientific Roundtable October 5, 2020 states, "A large associated plume of contamination in the shallow aquifer extends over much of the facility, with the highest concentration at the fire testing pad (234,000 ppt PFOS). As a result of this detection of PFAS in the shallow groundwater aquifer, the Navy began notifying the public in areas potentially impacted by groundwater contaminants. Although a 150-foot-thick clay formation separates the shallow aquifer from the deeper aquifer tapped by area private drinking water wells, the Navy nevertheless planned off-site private well sampling to ensure there were no site contaminants affecting private drinking water wells. Sampling of approximately 80 private wells off-base took place in July 2018…"
    a. Since 2018, MDE has known that the contaminated shallow aquifer is tapped by private drinking wells and farm wells. Why did MDE exclude this information and imply that all local wells are in the deeper aquifer?
    b. The Navy sampled 42 private wells. Why does MDE state that sampling of approximately 80 private wells took place?
    c. PFAS detections in groundwater west of Site 10 indicate that additional public areas could potentially be affected. Does MDE believe that areas outside of the Navy's drinking water sampling could be impacted?

    a. When the PFAS was discovered, the team determined that notifying residents in downgradient areas was necessary to ensure no one was drinking potentially impacted water from the site. After residents notified the team, the only well discovered to be tapping the shallow aquifer was a non-functioning well

southwest of the site. Records of other wells in downgradient directions were sought from MDE records and from Calvert County, and no other shallow water wells have been identified downgradient from the site.

b. There is an error in the report which states that 80 wells were sampled. This will be corrected in the record.
c. No, based on evaluation of groundwater elevation data collected. The drinking water areas most likely to be impacted by Site 10 have been designated and sampling conducted.

11. In regard to PFAS, MDE's stated goal is to "establish a risk-based scientific approach to detect, evaluate and minimize the impact of PFAS in the State." Does MDE have any goals related to protecting humans, animals and the environment from known sources of PFAS in Maryland?

    Yes, this is a priority for MDE and MDE has initiatives underway to support its efforts to understand, communicate, and manage unacceptable human health risks posed by PFAS, including at sites with known PFAS sources. Where MDE finds levels in public drinking water systems above the EPA Health Advisory Level, MDE takes immediate action in cooperation with the impacted utilities to mitigate or eliminate these exposures. MDE's goals are to protect human health and the environment from levels of PFAS that result in unacceptable risks, based on sound science. This includes addressing ongoing releases of PFAS into the environment where such releases pose unacceptable risks. Click here for more information https://mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx

12. MDE is apparently developing a GIS-based map to identify potential sources of PFAS in Maryland. What is MDE doing to address the known sources of PFAS in Maryland?
    Please see response to question 11.

13. The Navy has restricted deer culling programs at NRL CBD and prohibited human consumption of the deer due to PFAS contamination of surface water on the base. Has MDE evaluated the risks for individuals who consume deer from the surrounding areas?
    No studies have been conducted in Maryland evaluating the risk of deer consumption.

14. A basewide Site Inspection (CH2M, 2016) was conducted to determine whether historical practices had led to site-related releases of contaminants into soil or groundwater at six environmental response sites and two areas of concern (AOCs). Results of the SI resulted in recommended further evaluation of potential risk from surface soils for all sites except Site 2 (Chemical Burial Area) and AOC C (Chemical Burial Area 2); these two sites did not require further evaluation. Will there be further evaluation of potential risk from groundwater at the six environmental response sites and two areas of concern (AOCs). See response to questions #18 and #19 below. The factsheet at the following link may also be helpful:

https://mde.maryland.gov/programs/LAND/MarylandBrownfieldVCP/Documents/NRL%20-%20Chesapeake%20Bay%20Detachment%20FS.pdf.

15. When basewide Site Inspection (CH2M, 2016) was completed, MDE and NRL-CBD were not aware that shallow groundwater wells were present surrounding the base. After learning about the off-base use of shallow groundwater in 2018, did the Navy or MDE re-evaluate potential risks or the need for additional investigations at Site 2 (Chemical Burial Area) and AOC C (Chemical Burial Area 2)? See response to questions #18 and #19 below.

16. Based on results of the SI (CH2M, 2016), an Expanded Site Inspection (ESI) was conducted for the remaining sites (CH2M, 2019a). Results indicated that surface soil should be further evaluated in an RI for Site 3 (Landfill 1), Site 4 (Landfill 2), Site 5 (Landfill 3), and AOC D (Water Tower). Results also indicated that Site 7 (Road Oil Application) does not require further action while Site 9 (Photo Processing Waste) requires further evaluation. When the ESI was completed, did MDE and NRL-CBD evaluate potential risks to shallow groundwater wells surrounding the base which utilized for drinking water and agriculture? Yes. Potential risks to use of groundwater surrounding the base were evaluated, and no risks were identified per the SI and ESI reports.

17. Will there be further evaluation of potential risk from groundwater at Site 3 (Landfill 1), Site 4 (Landfill 2), Site 5 (Landfill 3), and AOC D (Water Tower)? No risks were identified relative to groundwater as part of the SI for Sites 3, 4, 5, and AOC D; however as part of the RI, groundwater risk evaluation will be conducted.

18. Which sites at NRL-CBD require additional groundwater investigations? Site 3, Site 4, Site 5, Site 9, and Site 10.

19. Which sites at NRL-CBD do not require additional groundwater investigations? Site 2, Site 6, Site 7, Site 8, AOC B, and AOC C. Neither AOC D nor Site 7 warranted groundwater investigation.

20. Which sites at NRL-CBD require additional soil investigations? Site 3, Site 4, Site 5, AOC D, Site 9, and Site 10.

21. Which sites at NRL-CBD do not require additional soil investigations? Site 2, Site 6, Site 7, Site 8, AOC B, AOC C, MRS 002, and MRS 003.

22. Based on results of an RI, a Focused Feasibility Study was conducted to determine ways to address human health risk from possible future exposure to groundwater at MRS 001 (Tetra Tech, 2016a). After learning about the off-base use of shallow groundwater in 2018, did the Navy or MDE re-evaluate potential human health risks from exposure to

groundwater at MRS 001? Human health risk for shallow groundwater was assessed during the RI; however the Navy is considering further action for shallow groundwater with respect to impacts from the other sites.

23. The remedial alternatives for groundwater at MRS 001 were presented in a PRAP (CH2M, 2018a). The Navy, with the support of MDE, proposed to implement land use controls to prevent unacceptable human health risks from hypothetical future exposure to site-related contaminants in shallow groundwater. Do land use controls prevent unacceptable human health risks from exposure to site-related contaminants in shallow groundwater through the current use of off-base shallow wells? Subsequent to the PRAP being issued, PFAS was identified in the groundwater and the Navy is evaluating risk from all sites before selecting a final action.

24. A Site Investigation (Malcolm Pirnie, Inc., 2010) was conducted in 2010 to identify, and confirm the presence of contamination at MRS 003. The Site Investigation included surface soil sampling, installation of temporary monitoring wells, and collection of groundwater samples. Based on the results of the SI, MRS 003 was recommended for an RI. An RI (Tetra Tech, 2016c) was completed to characterize the nature and extent of contamination, and to quantify the potential risks posed to human health and the environment as a result of exposure to site-related contaminants. The RI indicated that lead in surface soil posed a human health risk for hypothetical future residents, construction workers and industrial workers as well as an ecological risk for ecological receptors. The RI also indicated that groundwater presented a risk to future hypothetical residents due to metals. After learning about the off-base use of shallow groundwater in 2018, did the Navy or MDE re-evaluate potential human health risks from exposure to MRS 003 site-related contaminants in shallow groundwater through the current use of off-base shallow wells? See response to question #22.

Questions for the Maryland Department of the Environment August 2021

Request MDE provides an update to the RAB on how many PERFLUORINATED COMPOUNDS or aqueous film forming foam (AFFF) sites exist in the state of Maryland.

Response: MDE oversees the investigations, assessments and potential cleanup of PFAS within several different administrations in the MDE. MDE's Water Science Administration is actively investigating public water systems, surface water, and fish tissue across the state. The Federal Facilities Assessment and Remediation division within the Land Restoration Program works closely with the military installations and EPA to assess and remediate contamination which includes PFAS compounds. Currently the Roundtable document summarizes many of the known Federal Facility sites:
https://mde.maryland.gov/programs/Water/water_supply/Documents/PFAS-Roundtable2020-10-05.pdf

Please find updates on federal facilities, public water systems testing, and other PFAS-related efforts posted here: https://mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx

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Of those sites how many have preliminary assessments reports and/or Site Investigation reports completed.

Response: Sites are at various stages in these processes and the stage is dependent upon a host of factors ranging from the regulatory program it falls under, like a federal facility such as NRL, to site-specific factors and the Conceptual Site Model for the site.

There are Preliminary Assessments (PAs) ongoing for Indian Head, Ft. Detrick, and Forest Glen Annex. PAs were done at both Bay Head Road Annex and former David Taylor Research. Consequently at Bay Head Road Annex, a Remedial Investigation was finalized in May of 2020. White Oak is currently conducting Site Inspection (SI) activities, as is NRL-CBD. A SI has been conducted at Brandywine, and at Joint Base Andrews. A SI was also conducted at Ft. Meade. SI activities are currently underway at Aberdeen Proving Ground and Patuxent River Naval Air Station.

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Of those AFFF sites how many are the EPA involved in?

Response: EPA involvement in AFFF sites as well as many other sites depends on the regulatory program involved and the funding source. Typically EPA is involved in most federal facilities, NPL sites, sites where investigations are funded by EPA and periodically when MDE asks for support. This is not based on the presence of AFFF in many instances.

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Request a comparison of how the available data at the Naval Research Laboratory Chesapeake Bay Detachment compares to other existing data throughout the state of Maryland.

Response: Sites are investigated and assessed on a site-specific basis based upon the site's Conceptual Site Model and associated potential exposure pathways.

Since this NRL facility was a test center for fire-extinguishing agents starting in 1968, the concentrations of PFAS at NRL-CBD are significant, relative to where other investigations are being or have been conducted. Starting in the 1980s, however, the infrastructure for the Fire Test Area was upgraded and tests designed to prevent release of testing liquids into the ground.

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How many staff does the state of Maryland have dedicated to managing AFFF sites?

Response: The MDE has many project managers within various programs throughout the agency who investigate or are involved in the investigations of AFFF sites as well as other environmental contaminants. For current and former DoD sites, we have 9 project managers within MDE’s Federal Facilities Assessment and Remediation (FFAR) division. How many different project managers are there managing these sites?   9 in FFAR Do they collaborate and exchange information to best protect the citizens of the State?   Yes, FFAR has weekly meetings to confer on all aspects of our federal facilities projects. Also MDE’s Water and Science Administration, Dept. of Natural Resources, the Md. Dept. of Health, and the Md. Dept. of Agriculture, have been and will continue to be involved in PFAS investigations and sample analysis.

Is there an assigned environmental toxicologist on this project? Yes.

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How does the Navy progress at this site compared to other locations in the State?

Response: Although the level of contamination is significant, this is a relatively small site and there is only one known source area. As a result, all impacted media have been sampled, including groundwater, soil, surface water and sediment on-site, in addition to off-site groundwater; the Navy is already planning for the Remedial Investigation phase. At larger installations with multiple sites and source areas, the progress has been slower relative to NRL.

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Does the MDE take lessons learned or best management practices employed at other AFFF site PA/SI they manage in the state of Maryland and apply that to other sites they manage?

Response: Yes, our group has weekly meetings to confer on all aspects of our federal facilities projects. In addition, Land Restoration Program personnel confer with other departments in MDE and state agencies working on PFAS assessment and remediation in various media across the state.

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Why is the information presented limited to PFCs only? Being a former fire training area, I would surmise that there are multiple other chemicals present above their regulatory standards.

Response: The purpose of the public meeting was to present PFAS results and initiate the Restoration Advisory Board.

The Final Fire Testing Area Site Assessment Report of 2009 (available online in NAVFAC administrative records) included site-specific groundwater testing for petroleum-related products; no further action was required based on those results. However, the Navy did recently sample the groundwater at Site 10 for constituents other than PFAS again, since the AFFF investigation was initiated; this data will be included in the upcoming SI report.

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Given the known drinking water wells that exist in the area how is this being considered as part of the evaluation. In my experience performing site assessments, the County and State groundwater databases are generally reliable to a certain date and time. Many of the homes and groundwater wells are not integrated into the well databases. Please describe and explain the process in which a systematic well assessment was performed to evaluate receptors.

Response: MDE's well database was utilized as well as consulting with Calvert County to look for additional well records for receptors in areas downgradient. There has also been extensive outreach conducted at NRL, inquiring about private drinking water wells.

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Request MDE describes how the sites at the Naval Research Laboratory Chesapeake Bay Detachment considered the various human and ecological receptors were taken into account throughout the various assessments. Were there any sites closed out at the Naval Research Laboratory Chesapeake Bay Detachment? Yes. That information can be found in this factsheet: https://mde.maryland.gov/programs/LAND/MarylandBrownfieldVCP/Documents/NRL%20-%20Chesapeake%20Bay%20Detachment%20FS.pdf If so, can you confirm that all exposure and receptor pathways were fully evaluated given the known groundwater wells in the area. Given the PFC concentrations are there regulatory reopeners underway to consider synergistic effects of multiple chemicals exceeding regulatory standards?

Response: Within CERCLA there are always potential reopeners and sites are looked at during their 5-year review period and assessed accordingly. Two Decision Documents at NRL-CBD have been signed, but neither necessitate 5 Year Reviews; one was No Action, the other consisted of a soil removal. The site and relevant and potentially complete exposure pathways as well as future hypothetical exposure pathways are evaluated throughout the process and continue to be. As additional information and data is generated, ecological and human health assessments are performed. The process for PFAS and related potential exposure pathways are ongoing in and around this facility.

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Can you provide details on the radius included in this assessment? Can you please identify how the groundwater wells located at Harbor Road, Chesapeake Village Tower and Richfield Station were integrated into the groundwater model? Can you share the fate and transport modeling report?

Response: Currently, the focus is on private homes immediately adjacent to the facility and downgradient as the chances for impact are greatest there. As stated previously, PFAS was non-detect in all but 3 private wells sampled; in the wells which had detects, PFAS was found well below the health advisory level of 70 ng/L for PFOA and PFOS. Groundwater modeling may be done as part of future RI activities at NRL-CBD, if necessary.

Per MDE's Water and Science Administration, the Town of Chesapeake Beach's drinking water sources (3 wells) are tentatively scheduled for sampling and analysis under Phase 3, expected to begin later this summer (by sometime in September). One of the Town's 3 wells is believed to be near Richfield Station. Collection of these samples will be completed by MDE's Field Services Program, and the testing of the raw water from these wells will be conducted by the Maryland Department of Health- Laboratories Administration. For any additional water sampling of the Town's water systems for PFAS, please refer to the Town of Chesapeake Beach website or contact the Town directly.

Thank you for your e-mail,_____. In answer to your latest questions (Oct. 4, 2021) MDE's Water and Science Administration has started some fish tissue sampling in the area around Chesapeake Beach. Herring Bay, just north of Chesapeake Beach, was sampled on 9/27/2021 for fish tissue and surface water. Samples have been taken to the lab and we anticipate receiving results by the end of October. Should surface water or fish tissue analysis highlight this as an area of concern, a more intensive study would be planned. At this time, a rough estimate for a timeline on additional study is sampling in spring, with a report toward the end of the summer.

MDE received, reviewed and did in fact comment on Chesapeake Beach's aquatic life tissue results, which can be viewed at this link: https://www.chesapeakebeachmd.gov/resident-resources/pages/naval-research-laborat ory-chesapeake-bay-detachment.

A definitive timeframe for when MDE is going to request that the Navy start remediation on the streams cannot be determined at this time, because any remedial technology being considered requires information from the additional sampling that is occurring now and during this fall. Moreover, further sampling may be required *beyond that*, based on the types of technologies the Navy is considering.

More information will be presented at the next RAB meeting, with opportunities for questions and answers. It is scheduled for Nov 10, 2021from 5-7 pm, as stated on the Navy's website.

October 20, 2021

Question posed to MDE: Based on my reading of possible upcoming legislation and/or rules already in place regulating PFAS discharge into the environment from sewage plants, would the discharge of PFAS from the streams fall under that current or future law or rules?

Maryland does not currently have statewide numeric PFAS surface water quality criteria. That said, Maryland water quality standards regulations include narrative criteria to protect aquatic life and human health from toxic materials in toxic amounts. Also, it is Maryland state policy that when a fish consumption advisory is issued for a waterbody, such as the recent Piscataway Creek advisory, the designated use of that waterbody is determined to not be supported and results in a 303(d) listing of the waterbody as impaired for the specific contaminant. Therefore, if a WWTP discharged into a waterbody that was listed on MD's 303(d) list as impaired by PFAS, the discharge permit would need to factor PFAS into the effluent limits.