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December 19, 2022

**Subject: Proposed Site 32 Record of Decision regarding on-site wetlands**

Dear Base Cleanup Team,

The proposed Record of Decision for Site 32, which proposes to destroy existing seasonal wetlands by covering them with three feet of soil, fails to provide the findings, policies or regulations to support this decision, which abandons the 2018 on-site wetland mitigation plan agreed to in principle by your agencies.

The wetlands decision falls short on three counts. First, the soil below one foot of depth has not been characterized. Therefore, the nature and extent of the contamination is speculative, and the decision to destroy the wetlands is based on conjecture, not scientific data.

Second, no new health risk model is included to justify the change by describing how, under the original 2018 on-site wetland mitigation plan (which you agreed to), radium-226 would make its way from more than four feet below ground, through vegetation, and cause harm to unsuspecting recreational visitors walking through a wetland or wildlife occupying the site.

Third, per your June 17, 2022, communication with Restoration Advisory Board (RAB) Community Co-Chair Richard Bangert, you state that the on-site wetland mitigation plan that had been previously approved has become financially infeasible due to a new, special and more costly radium scanning requirement specifically for the wetland areas. The special wetland standard was arbitrarily established by your agencies without being able to point to any federal or state guidelines requiring the higher standard.

We, the undersigned RAB members, request that the Navy delay signing of the ROD until additional soil investigations and health risk modeling specific to the 2018 on-site wetland mitigation scenario are provided to support (or not support) the wetland destruction. Below we provide background information and the rationale for our request.

## Background

In 2018, the Navy presented the conceptual design for remediation of Site 32 to the RAB. The design included on-site mitigation of wetland impacts that included digging up the existing 10 acres of seasonal wetlands and constructing new wetlands in the same location and same elevation with an additional five acres. Furthermore, a 2018 draft Navy work plan described and illustrated the details of the on-site wetland mitigation plan, which included site contouring that would have increased the watershed draining to the new wetlands thereby increasing viability.

Subsequently, several hundred thousand cubic yards of soil were imported to the site in 2019 to construct the soil cover over the entire 60-acre site and reconstruct the wetlands. The entire project was to be completed in 2019 or 2020. However, the work plan was not finalized, and no further work has ensued.

We only came to understand the reason for the delay in September 2021 when the as-yet-unsigned Site 32 ROD was issued. The draft ROD contains a comment by a health physicist at the California Department of Public Health - Radiologic Health Branch (CDPH-RHB), which serves as an advisory agency to the California Department of Toxic Substances Control (DTSC) on the Base Cleanup Team (BCT). The comment, made during a July 21, 2020, meeting, reads as follows:

It was understood by CDPH-RHB, during the subject meeting, that the wetland mitigation for this effort would be in the form of wetland recreation on the surface of the proposed cap. The development of wetlands on the cap degrade the quality and integrity of the cap over time. Therefore, the cap would be viewed as unsuitable to fulfill the need of radiological containment; and thus, not in line with CDPH-RHB requirements for release efforts.

On March 21, 2022, RAB Community Co-Chair Richard Bangert wrote to the Navy and U.S. EPA, issuers of the Site 32 ROD, asking for “the applicable or relevant and appropriate requirement [ARAR], regulation or policy guidance that states that a seasonal wetland as proposed in 2018 on top of four-feet of clean soil is unacceptable because it would not protect human health and the environment.” He stated that he could find not an ARAR listed in the ROD that “pertains to a nexus of wetland, radium-226 contamination, and health risk.”

On June 17, 2022, a joint response was provided to Mr. Bangert from the entire BCT, consisting of the Navy, US EPA, DTSC, and the Water Board. The response states, in part, “There are no ARARs, regulations, or policy guidance that state a wetland is unacceptable.” The response then goes on to argue that if the on-site wetland mitigation were to be implemented, the scanning criteria for the bottom of the excavated wetland areas, prior to filling with clean soil, would be cost prohibitive. This assertion is speculative and not supported by any findings showing widespread radium-226 at four feet below ground surface, or policy guidance requiring the higher scanning standard due to a wetland being constructed above.

## Analysis

Numerous radiological scanning and removal actions at Site 32 over more than a decade have identified radium-226 source material as “artifacts,” such as a toggle switch and a glass vial, and the elevated readings were in only two or three areas. The artifacts were removed. The scanning equipment was only sensitive to a depth of one foot.

If this had been a former mining or mineral processing site, ubiquitous contamination would be expected. But it was not. Instead, artifacts from the dial painting shop, such as rags, wipes, and paint brushes, were disposed of at the adjacent underground dump site. Some of the paint shop waste was assumed to have been spread to Site 32 during construction of the runway through the site in the mid 1950s, and some could have been deliberately disposed of on Site 32.

The above referenced BCT response then goes on to describe what amounts to a policy by saying, “if wetlands were mitigated on the soil cover . . . the development and maintenance of deep-rooted wetland vegetation could be problematic as it may create a potential exposure pathway to residual contamination.” It is anyone’s guess as to how a regulatory agency would determine whether or not the wetland vegetation was problematic, since no regulation or policy guidance exists.

Moreover, the BCT fails to consider a critical variable in its health risk determination for the on-site wetland mitigation scenario. The proposed future use of the site is a public open space park. A wetland, by definition, would not be identified as a suitable location for constructing a public trail by any parks agency. The absence of regular visitors to the wetlands begs the question, where is the complete pathway to exposure?

To inform your decision, look to the experience at one of the worst possible scenarios for radiological contamination in the country – the former Fernald Feed Material Production Plant in Fernald, Ohio. It fabricated uranium fuel cores for the U.S. nuclear weapons program for decades. It was closed in 1990, declared a Superfund site, and remediated to open space standards. Today it is the Fernald Preserve nature preserve, complete with a 26-acre wetland. <https://epa.ohio.gov/divisions-and-offices/environmental-response-revitalization/cleanup-and-investigation/doe-fernal-d-site>

Site 32 is not even remotely close in comparison. It was not a processing site for any radiological material. It was not even a disposal site. The only identified contamination is artifacts from the dial painting operation.

Another line of inquiry absent from the health risk assessment concerns the two types of health risk exposures from radium-226. One type is from external radiation. The other type is by ingesting radium-226 into the body. The health risk assessment in the ROD relies only on the first type, external radiation, citing US EPA guidelines for remediation of CERCLA sites with

radioactive contamination. The guidelines recommend an exposure limit of 12 millirems per year. (A dental x-ray emits about 3 millirems.) This exposure limit is *per year* over a prolonged period of decades, not a one-time chance encounter with a blade of grass in a wetland with a five-foot long root system.

Furthermore, the external radiation exposure model of millirems per year is more appropriate for controlled settings, such as dental offices, hospital x-ray labs, and workers handling radium-226 paint.

The other type, direct ingestion, is the more common type of exposure to radium-226 that was made infamous by the radium dial painters in the early 20th century known as the Radium Girls. Modeling the health risk on potential ingestion or inhalation of dust would, in our opinion, be a more reliable risk model given the fact that it is the natural environment, and there will be no buildings with regular occupants, only park visitors, occasional park maintenance crew, and undefined visits by wildlife.

For either of these exposure scenarios to become a health or environmental risk under the 2018 on-site wetland mitigation scenario, findings would have to show widespread radium-226 below four feet of depth. More importantly, the Navy would have to construct a health risk exposure model in which (a) wetland root systems extending more than four feet deep would be the norm, not an anomaly; (b) root systems commonly found in the soil of these seasonal wetlands would uptake radium; (c) the amount reaching the surface was widespread; and (d) potential receptors, meaning people and wildlife, would repeatedly over a span of decades come directly in contact with the hypothetically contaminated vegetation and ingest or inhale live or decayed plant matter or dust containing radium-226.

Moreover, the U.S. EPA's own 2004 study of the mobility of radium-226 concludes that the only way to make any risk decision is to evaluate site-specific conditions. While it is theoretically possible for radium-226 to be absorbed by plants, the degree to which this might occur is completely dependent on local soil conditions and the extent of the contamination. This is the overwhelming conclusion of a scientific study titled, "*The Environmental Transport of Radium and Plutonium*," by Brice Smith and Alexandra Amonette, Institute for Energy and Environmental Research, June 23, 2006.

The above report draws heavily on a 2004 study by the U.S. EPA on radium's mobility in the environment titled, "*Understanding the Variation in Partition Coefficient, Kd, Values: Volume III: Review of Geochemistry and Available Kd Values for Americium, Arsenic, Curium, Iodine, Neptunium, Radium, and Technetium*." In the report, the EPA draws the following conclusion: "Given the absence of definitive maximum and minimum Kd values for radium as a function of the key geochemical parameters, such as pH, EPA suggests that Kd values measured for radium at site-specific conditions are thus essential for site-specific contaminant transport calculations and conceptual models."

The Site 32 ROD provides no such site-specific study of site-specific conditions or site-specific contaminant transport calculations and conceptual models to support the assertion that wetland vegetation in the on-site wetland mitigation scenario could become problematic. There is no study, no data, and no model to support the decision to scrap the on-site wetland mitigation design.

It is worth noting that the health risk exposure limit for radium-226 is not zero. The exposure has to be elevated or chronic, not a one-time chance encounter. In fact the federal and state guidelines for drinking water allow for tap water to contain trace amounts of radium-226, a naturally-occurring mineral.

As previously stated, there is presently no model or set of guidelines that you can point to that would predict that “wetland vegetation could be problematic as it may create a potential exposure pathway to residual contamination.” You have not even performed basic due diligence and applied this hypothesis to the existing wetland areas, which have been sitting there virtually unaltered for 65 years since the runway was expanded. If your hypothesis had any merit, would it not be worth examining the existing plants and their roots to see if the existing conditions have become problematic? The existing, or baseline, conditions are, after all, the worst case scenario, in that the soil on which the vegetation resides is original soil, not the new clean soil proposed under the on-site wetland mitigation plan. *And* the vegetation is random, whereas the new wetlands would have an engineered palette of site specific wetland vegetation.

Regarding financial feasibility, currently there is no scientific evidence that the 2018 on-site wetland plan would be cost prohibitive. It was not cost prohibitive in 2018. It only became “cost prohibitive” after adopting new and unsubstantiated assumptions about the character and extent of radium paint waste artifacts, hypothetical vegetation scenarios, incomplete health risk modeling, and scanning standards untethered to any known federal or state guidelines or regulations.

For the record, the entire project cost for the Site 32 work plan design in 2018, which included on-site wetland mitigation, was pegged at around \$25 million. The un-signed Site 32 ROD issued in September 2021 has the cost for the entire soil cover work plan, with *no* on-site wetlands, pegged at around \$35 million. The BCT response to Mr. Bangert on June 17, 2022, states, “The rough order of magnitude estimate to implement a remedy which meets the more stringent clean up threshold and develop the wetlands on Site 32 property is approximately \$46 million.”

To summarize, the cost of remediating Site 32 while preserving, expanding, and enhancing on-site seasonal wetlands went from \$25 million in 2018 to \$46 million in 2022 because of a new and arbitrary scanning standard for the wetland areas, which would make up 25 percent of the 60-acre project area. The astronomical jump in projected cost to achieve a safe and environmentally responsible remediation of Site 32 while preserving wetlands is simply not believable.

The BCT has, therefore, become complicit in acceding to the CDPH-RHB's previously stated goal of eliminating the wetlands from Site 32 by adopting arbitrary scanning standards for the wetland areas that purportedly make the plan financially infeasible.

In sum, absent further investigation and modeling, the destruction of seasonal wetlands at Site 32 is not justified, and the Site 32 ROD should be held in abeyance until the requested information is incorporated into the decision-making process.

And finally, this decision to destroy seasonal wetlands at Alameda Point based on non-existent data and arbitrary policies flies in the face of the State of California's recent decision to preserve more natural habitat. On October 7, 2020, Gov. Gavin Newsom signed an executive order that made California the first state in the nation to commit to a "30 by '30" goal — a pledge to conserve 30 percent of the state's land and waters by 2030. It is one of the best ways to preserve biodiversity, prevent species extinction, and sequester carbon. Destroying seasonal wetlands at Alameda Point is going in the wrong direction.

Respectfully yours,

RICHARD BANGERT  
Alameda RAB Community Co-Chair, 2018–2022  
Member, 2011 – present

CAROL GOTTSTEIN  
Alameda RAB Vice Community Co-Chair, 2018–2022  
Community Co-Chair-Elect beginning 2023  
Member, 2011 – present

JANE SULLWOLD  
Alameda RAB Member, 2013 – present