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Comments sent via email to carlton_morris@fws.gov

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Re: Engineering Evaluation/Cost Analysis (EE/CA) for Removal of Lead-based Paint from Structures and Lead-contaminated Soil from Midway Atoll National Wildlife Refuge

Dear Mr. Morris,

These comments on the Engineering Evaluation/Cost Analysis (EE/CA) for Removal of Lead-based Paint from Structures and Lead-contaminated Soil from Midway Atoll National Wildlife Refuge are submitted on behalf of the Center for Biological Diversity (“Center”). The Center is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 320,000 members and online activists throughout the United States and internationally who are vitally concerned about and actively involved in the protection of Hawaiian species and their habitats.

The Center is deeply concerned with the ongoing harm to wildlife on Midway Atoll National Wildlife Refuge from lead-based paint contamination, including the lethal poisoning of up to 10,000 Laysan albatross chicks each year from ingestion of lead-based paint and the exposure of other protected species to lead contamination, including the Bonin petrel and endangered Laysan duck. The immediate removal of lead-based paint from all contaminated structures and the removal of lead-contaminated soil from Midway Atoll, beginning in 2011, are necessary to reduce unneeded harm to Midway’s wildlife and prevent continuing violations of the Migratory Bird Treaty Act and Endangered Species Act.

We support several of the cleanup goals outlined in the EE/CA including (1) the proposed cleanup level of 75 mg/kg for lead in soil; (2) the start date for the cleanup of 2011; and (3) removal of historic buildings in Decision Units 1 and 2. However, we have several concerns about the proposed alternatives, including the (1) unacceptably long timeline for cleanup; (2) the failure to evaluate the removal of ~65 lead-contaminated buildings, many of which are not scheduled for use; (3) the failure to remove lead-contaminated soil at the appropriate distance

and depth in each Decision Unit; and (4) the use of geomembranes in place of more comprehensive removal of lead-contaminated soil.

We would support an alternative for each Decision Unit that includes the removal of lead-contaminated buildings and structures not scheduled for use, the removal of lead-contaminated soil at the appropriate distances and depths, and which completes the cleanup in two years.

These comments provide a brief background on the Center's concerns regarding the ongoing harm to Midway's wildlife from lead-based paint contamination, and detailed comments on the EE/CA alternatives beginning with the three issues of particular interest to the USFWS (i.e. proposed cleanup level, schedule, and removal of historic buildings).

I. Background on the Center's concerns regarding ongoing harm to Midway's wildlife from lead-based paint contamination

In February 2010, the Center sent a notice of intent to sue the Secretary of Commerce and the National Oceanic and Atmospheric Administration (collectively "NOAA"), the Secretary of Interior and the Fish and Wildlife Service (collectively "USFWS"), and the State of Hawai'i Department of Land and Natural Resources ("State of Hawai'i") for violations of the Migratory Bird Treaty Act ("MBTA"), the Endangered Species Act ("ESA"), and the Resource Conservation and Recovery Act ("RCRA") relating to lead-based paint and other waste on Midway Atoll. In January 2011, the Center sent a notice of intent to sue the Navy for the same violations.

As detailed in the Center's notice letter, USFWS, NOAA, the State of Hawai'i, and the Navy are violating the MBTA by allowing the lethal and sub-lethal lead poisoning of Laysan albatross, a species which is included in the list of migratory birds protected by the MBTA. The lead-caused mortality of Laysan albatross chicks on Sand Island has been documented since at least 1982 (Sileo and Fefer 1987) when Midway was under the custody of the Navy. The lead-poisoning of chicks continued after Midway was transferred to the Department of the Interior in 1996 and after Midway became part of the Papahānaumokuākea Marine National Monument in 2006 under management of the USFWS and NOAA in coordination with the State of Hawai'i.

Laysan albatross chicks within five meters of buildings on Sand Island had average blood lead values of 440 µg/dL, compared to an average blood lead of 6 µg/dL in chicks nesting greater than 100 meters from buildings (Finkelstein et al. 2003). Lead-poisoned chicks on Sand Island have 440 times the background blood lead level and 44 times the Centers for Disease Control's blood lead level of concern for children (10 µg/dL) (CDC 1991). Blood lead values greater than 100 µg/dL have been shown to cause encephalopathy and death in both humans and animals (National Research Council 1993). A substantial proportion of Laysan albatross chicks nesting in proximity of buildings/structures exhibit clinical signs of lead poisoning—peripheral neuropathy referred to as "droopwing." Droopwing manifests in the chicks' inability to raise their wings, which commonly drag on the ground resulting in broken bones and open sores. Chicks with droopwing will never be able to fly, and will die either directly as a result of lead poisoning, or,

if they manage to survive to fledging age, from starvation at the end of the breeding season when their parents stop feeding them.

Recent research indicates that lead poisoning is having negative population-level effects on the Laysan albatross. Finkelstein et al. (2009) estimated that up to 7% of Laysan albatross chicks on Sand Island, equal to ~10,000 chicks in 2007, fail to fledge as a result of lead poisoning from ingestion of lead-based paint. The lead-poisoning deaths of 7% of chicks on Sand Island each year was projected to create a 16% reduction in the Laysan albatross population size at 50 years into the future. Furthermore, models found that at the current rate of lead-induced chick mortality, lead poisoning would be responsible for a decrease in the Laysan albatross population size by ~100,000 to 360,000 birds in 50 years (Finkelstein et al. 2009).

As detailed in the Center's notice letter, the failure by USFWS, NOAA, the State of Hawai'i and the Navy to remediate lead-based paint from all buildings and contaminated soil on Sand Island also jeopardizes the survival and recovery of the Laysan duck and may constitute take under the Endangered Species Act. NOAA has provided examples of habitat-modifying activities that may harm a listed species and thereby constitute a take under the ESA. 64 Fed. Reg. 60727, 60730 (Nov. 8, 1999). These examples include contaminating a listed species' habitat with pollutants and "poisoning, or contaminating plants, fish, wildlife, or other biota required by the listed species for feeding, sheltering, or other essential behavioral patterns." Id. Based on studies of the effects of lead on Sand Island bird species and the presence of the federally endangered Laysan duck on Sand Island, it can be inferred that the failure to remediate lead-based paint contamination on Sand Island is causing the take of the Laysan duck, and that the probability of take will increase as the Laysan duck population on Sand Island grows. As detailed above, the Laysan duck is susceptible to lethal and sub-lethal lead poisoning on Sand Island because: (a) the Laysan duck uses areas surrounding lead-contaminated buildings; (b) the Laysan duck's behaviors involve probing soil that has a high likelihood of lead contamination and foraging for plants and insects which place it at risk of inadvertently ingesting paint chips; and (c) ducks can be poisoned by the ingestion of a small paint chip (~0.1 grams). Thus it is likely that unauthorized take of Laysan ducks is occurring on Sand Island in violation of the ESA. Of added concern, this year a short-tailed albatross pair successfully nested on Midway, and a future breeding population of this federally endangered species could be exposed to lead poisoning and deaths of chicks similar to the Laysan albatross

II. Comments on the EE/CA

We support the proposed cleanup level of 75 mg/kg for lead in soil, the start date for the cleanup of 2011, and the removal of historic buildings in Units 1 and 2. However, we do not support the long timeline for cleanup, the failure to propose removal of contaminated buildings not planned for use, the failure to excavate the lead-contaminated soil to the appropriate depths and distances, and the use of geomembranes in place of comprehensive soil removal. An alternative that completes cleanup in two years, removes non-needed contaminated buildings, and removes lead-contaminated soil to the appropriate distances and depths would provide the best and most cost-effective solution to protecting Midway's wildlife.

A. The proposed cleanup level for lead in soil appears to be appropriate.

The proposed cleanup level of 75 mg/kg (75 ppm) for lead in soil appears to be appropriate based on the analyses described in the EE/CA Appendix C, the clean-up level for lead in soil recommended in the USFWS's *Ecological Risk Assessment for Lead in Soil and Laysan Albatross Chicks on Sand Island*, and conversations with toxicologists. This preliminary cleanup goal was developed to be protective of the Bonin petrel, but the agencies must ensure that this level will be protective of other wildlife species on Midway, including the Laysan albatross and Laysan duck.

B. The proposed timeline for cleanup is unacceptably long.

The proposed timeline for completion of the cleanup of six years or more is unacceptably long and will result in unneeded harm to Midway's wildlife. This timeline will result in the increased spread of lead-contaminated paint across the island, cause unneeded deaths of Laysan albatross chicks and potentially other species, and continue violations of the Migratory Bird Treaty Act and Endangered Species Act. Structures on Midway Atoll are subject to extreme weathering processes, and the deterioration of non-remediated structures with lead-based paint is increasing over time. Each year that the cleanup is delayed, more lead-based paint peels from the non-remediated structures and spreads across the island, increasing the potential for poisoning wildlife and increasing the difficulty and cost of the cleanup. Given the time-sensitive nature of the cleanup, the removal of lead-based paint from structures and lead-contaminated soil should be expedited. The EE/CA provides no substantive rationale for why a shorter timeline is not possible.

A timeline of two years would provide a more reasonable alternative that is appropriately protective of Midway's wildlife, with work beginning in the fall of 2011 and completed in fall of 2012. The cleanup of the units that are most hazardous to wildlife, identified as Units 1, 2, and 6, should be prioritized for 2011. The remaining cleanup should be accomplished in 2012.

C. The removal of historic buildings in Decision Units 1 and 2 is necessary.

The proposed removal of four historic buildings from Units 1 and 2 is necessary to protect wildlife and people. The four Cable Company buildings and two Marine barracks are in an irreparable state of decay (beyond renovation and repair) and pose ongoing, significant risks due to their toxic components (including lead and asbestos) and structural unsoundness. The lead soil concentrations surrounding these buildings were among the highest detected on Sand Island, including concentrations of 1,695 ppm near Cable Company Building 643 and 1,091 ppm near Marine Barrack Building 578—well above the recommended cleanup level of 75 ppm. Units 1 and 2 were identified as two of the three most hazardous units to wildlife, and these buildings should be prioritized for removal in 2011.

D. The proposed alternatives do not provide options for removing buildings from most of the units, which is the best alternative for protecting Midway's resources and personnel.

The EE/CA proposes to remove only six buildings, which leaves ~65 buildings standing that are contaminated with lead-based paint—1 in Unit 1, 2 in Unit 3, 3 in Unit 4, 2 in Unit 5, 8

in Unit 6, 5 in Unit 7, and 44 in Unit 9—in addition to a number of ancillary structures (memorials, lift stations, electrical substations, flag poles, hydrants) that are covered with lead-based paint. As explained in detail below, the best alternative for protecting Midway’s resources is to remove all structures contaminated with lead-based paint that are not scheduled for use. However, the EE/CA fails to provide alternatives for removing these non-needed, contaminated structures. The EE/CA dismisses its failure to provide alternatives for the demolition of the lead-based structures with a single statement on page 33 that cites the impracticality of costs: “While demolition may be practical for a number of additional structures, previous cost estimates (GeoEngineers, 2003 and FWS, 2004) have indicated that large scale demolition is currently impractical due to costs.” This cursory dismissal is inadequate. An examination of the cited FWS (2004) references, which were not included in the administrative record and not available for public inspection, reveals that these USFWS reports do not provide cost estimates for removing additional buildings. The GeoEngineers (2003) report, which was not included in the EE/CA bibliography or administrative record, highlights the decaying and unsafe state of the infrastructure on the Refuge which will only worsen over time given the harsh marine environment, and gives a cost estimate for demolition of a subset of inhabited structures and equipment storage structures. According to this report, demolition of 19 inhabited structures totaling 515,700 ft², including removal and disposal of asbestos, was estimated at \$11,345,400, while demolition of 54 equipment storage structures totaling 41,075 ft² was estimated at \$492,900. Neither of these estimates demonstrates that the cost of removing non-needed buildings is impractical, especially when weighed against the ongoing costs of maintenance and repair for these abandoned structures. The failure to provide alternatives including removing more buildings, or even all buildings, is a fundamental flaw in the EE/CA.

E. The EE/CA must provide a plan for the long-term maintenance for all buildings left standing, including the maintenance of their structural integrity, the exterior lead encapsulation coatings, and the interior lead-based paint.

The EE/CA proposed alternatives allow a minimum of ~65 lead-coated buildings to remain standing after remediation, most of which have no planned use. An additional 25 buildings that have already been remediated will also remain. Allowing such a large number of abandoned buildings to remain standing after remediation presents long-term problems and uncertainties that could jeopardize Midway’s wildlife and personnel. First, the lead encapsulation paint applied to each building during remediation must be regularly and rigorously maintained since all of the lead-based paint will not be removed during the remediation process. Because Midway’s structures are exposed to harsh weathering processes, this maintenance will require re-painting, and perhaps re-scraping, of exteriors on a regular schedule. However, the EE/CA does not provide any plan for or acknowledge the need for long-term maintenance of the lead encapsulation coating. Second, Midway’s buildings are decaying over time and will need to be structurally maintained and re-enforced to prevent their collapse. The EE/CA does not provide any evaluation of the structural integrity of the buildings, nor cost estimates of renovating, repairing, and maintaining the buildings. Third, many of these buildings have lead-based paint on their interiors which is not addressed by the EE/CA.¹ The EE/CA does not provide guidance on

¹ The EE/CA states that “CERCLA generally limits the lead agencies [sic] authority to respond to LBP inside a structure.” EE/CA at 32. The cited law provides an exception to this limitation, however, in that “the President may respond to any release or threat of release if in the President's discretion, it constitutes a public health or

how this toxic interior paint will be maintained and prevented from spreading to the outside environment. Due to the unique circumstances on Sand Island, where buildings are crumbling such that the inside/outside distinction may be meaningless with respect to lead-based paint and no person other than the USFWS can respond in a timely way to this environmental emergency, the EE/CA should assume that the lead agency has authority to address this interior lead-based paint as well.² In short, the EE/CA should provide a plan for the long-term maintenance of the buildings, including maintaining their structural integrity, the exterior lead encapsulation paint, and the interior lead-based paint.

F. Lead-contaminated soil must be removed to the appropriate distance and depth in each unit.

The EE/CA does not provide a clear explanation for how the areas (distances from buildings and depths) proposed for soil removal were determined for each unit. For all units, it appears that the proposed cleanup distances and depths are not sufficient to remove the lead-contaminated soil based on the findings of the soil samples. The soil samples indicate that lead contamination is patchy in distribution, and that high lead levels exceeding the cleanup limit are found both near and far from buildings and at shallow to deep depths. For example, soil sampling from Units 1, 3, 4, 5, 6, and 7 indicates that lead at concentrations above the clean-up level were found at distances up to 30 to 45 feet (the maximum sampling distance) from the building perimeters in all of these units and at depths of 24-28 inches or 30-36 inches (the maximum sampling depth) at these 30-45 foot distances. Because highly contaminated soil was found at the maximum distances and depths sampled, it is quite possible that high lead levels extend beyond these distances and depths, and that soil should be removed beyond them. At a minimum, the soil sampling data indicate that excavation of contaminated soil should occur to at least 45 feet from the building perimeters and at least to 3 feet deep in all units.

We are concerned that the recommended areas (distance and depth) for soil removal in the nine units are significantly smaller than what is indicated by the soil sampling. As outlined below, the removal distances for the preferred alternative 3 range from 15 to 50 feet and from 1 to 3 feet deep instead of the minimum of 45 feet from building perimeters and 3 feet deep indicated by the soil sample analyses:

Preferred Alternative Recommendations:

- Unit 1: up to 50 feet from the sides of buildings to 1 foot deep
- Unit 2: 30 feet from the sides of buildings to 2 feet deep
- Unit 3: 15 feet from the sides of buildings to 1 foot deep
- Unit 4: 20 feet from the sides of buildings to 3 feet deep
- Unit 5: 15 feet from the sides of most buildings to 1 foot deep
- Unit 6: up to 50 feet from the sides of buildings to 1 foot deep
- Unit 7: does not specify distance and depth of soil excavation
- Unit 8: does not specify distance and depth of soil excavation

environmental emergency and no other person with the authority and capability to respond to the emergency will do so in a timely manner.” 42 U.S.C. 9604(a)(4); *see also* U.S. Environmental Protection Agency, *Response Actions at Sites with Contamination Inside Buildings* (1993), available at <http://www.epa.gov/fedfac/documents/epa893.htm>.

² *Id.*

Unit 9: does not specify distance and depth of soil excavation

G. Geomembranes should not be used.

We are concerned that the use of geomembranes will result in significant hazards to Midway's wildlife that do not outweigh the potential benefits. Geomembranes are proposed for use in Units 1, 6, and 9 as part of preferred alternative 3 and in all units as part of alternative 4. For Units 1, 6, and 9, the EE/CA preferred alternative recommends laying down a geomembrane after excavating one foot of soil, rather than removing lead-contaminated soil to the appropriate depth (i.e. at least 3 feet). For all units, alternative 4 recommends placing a geomembrane on the surface instead of removing any lead-contaminated soil. The use of geomembranes poses several substantial hazards that will likely undermine the long-term integrity of the lead cleanup: (1) geomembranes must be replaced after several decades and thus do not provide a long-term solution to containing lead-contaminated soil; (2) geomembranes may not last as long as anticipated based on harsh island weathering processes; (3) geomembranes may create water drainage problems in the island's sandy soils leading to runoff and erosion hazards; and (4) geomembranes will exclude burrowing seabirds like the Bonin petrel from nesting in these areas given that the birds will not be able to penetrate the membranes and the proposed soil depths above the geomembrane (i.e. 1 to 3 feet) are too shallow for the birds to construct stable burrows. The lead-contaminated soil should be excavated to the appropriate depth (i.e. at least 3 feet) around each building instead of using the geomembranes.

H. The Laysan duck should be tested for lead contamination.

Lead contamination has been tested in only two species on Midway: the Laysan albatross and the Bonin petrel to a lesser degree. Given that the Laysan duck is a federally endangered species that has been observed foraging near the contaminated buildings, the Laysan duck should also be tested to ensure that it is not being harmed by lead contamination. Certainly the USFWS and NOAA should measure baseline contamination levels for the Laysan duck before the lead remediation to compare with levels after remediation. In addition, the USFWS should conduct a contaminants analysis of the insect samples that were collected as part of the *Ecological Risk Assessment* but never analyzed. As acknowledged by the *Ecological Risk Assessment*, the Laysan duck is a potential receptor group because it consumes terrestrial insects and vegetation that may have accumulated high levels of soil-borne contaminants in their tissues:

Three potential receptor groups that occur on the island include; (1) piscivorous species that obtain food from offshore sources, but whose chicks exhibit oral nest building behaviors that lead to incidentally ingestion of lead contaminated paint chips and possibly soil particles through preening; (2) piscivorous species that nest in burrows which can lead to high levels of contact with and incidental ingestion of contaminated soil; and, (3) omnivorous ground-feeding species (e.g., Laysan duck) that consume terrestrial insects and vegetation that may have accumulated high levels of soil-borne contaminants in their tissues. (p.11)

The EE/CA itself acknowledges in Figure C-1 that Laysan duck is a receptor through exposure by contaminated soil ingestion.

I. Clean sand should be used in the backfill of excavated areas.

The EE/CA does not ensure that the sand to be used to backfill excavated sites is free of harmful levels of contaminants. The EE/CA states that areas where contaminated sand is removed will be backfilled with “clean” sand taken from an area between the fuel pier and the cargo pier. Sand from this site should be tested for lead and other contaminants of concern to ensure that this is truly “clean” sand that will not introduce harmful contaminants into the remediated areas.

J. The EE/CA must present a plan for disposal of the lead-contaminated soil that is shipped off-island.

The EE/CA determined that the lead-contaminated soil on Sand Island is “non-hazardous” based on leachable lead levels. However, the soil samples were not tested for other contaminants of concern that might make it meet a “hazardous” designation. Indeed, the EE/CA raises cause for concern that Midway’s soil may contain hazardous levels of other contaminants. Of 14 soil locations analyzed for arsenic, chromium, lead and mercury and 5 analyzed for seven analytes of PCBs, one soil sample location had significant contamination with elevated levels of lead, mercury, and PCBs. Accordingly, the EE/CA should present a plan for disposal of the lead-contaminated soil that is shipped off-island since it may indeed be hazardous.

III. Conclusion

Thank you for the opportunity to submit these comments. The Center is pleased that the USFWS is finally addressing these issues and hopes that the final alternative selected is the best possible for Midway Atoll’s wildlife. A major hurdle in implementing the selected alternative will be funding the removal action. The Center urges USFWS to aggressively pursue funds to complete the removal action through a variety of means, including but not limited to the Central Hazardous Materials Fund, specific congressional budget requests, and contributions from other responsible agencies such as those listed in the Center’s notice letter. The legal and environmental risks grow significantly as the USFWS delays the lead-based paint removal action.

Please contact me with any questions regarding these comments.

Sincerely,



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