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December 23, 2019

Hon, Robert L. Wilkie
Secretary of Veterans Affairs
810 Vermont Ave., NW
Washington, DC 20420

Re: Amplification of rulemaking request concerning the presence of herbicide on Guam, American Samoa and Johnston Island.

Dear Mr. Secretary:

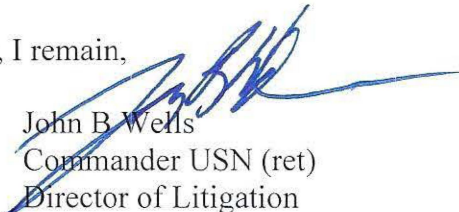
I write in amplification of our rulemaking request dated December 3, 2018 as amplified by our December 2, 2019 letter concerning the extension of the presumption of exposure to herbicide to those veterans serving on Guam from January 9, 1962 through December 31, 1980 and on Johnston Island from January 1, 1972 until September 30, 1977. Military-Veterans Advocacy believes that you have the authority to grant such rulemaking under the provisions of 38 U.S.C. §§ 1110, 1113(b) and 1116(a)(3).

I have enclosed a letter from Weston Solutions to Mr. Harry Allen of the Environmental Protection Agency concerning the presence of the chemicals 2,4-D and 2,4,5-T on and off military bases on Guam, As we know, these are the chemical components of herbicide. These chemicals are currently banned for use in the United States.

The report addresses the random testing taken in 2018. While only trace amounts of the chemical were detected, given the half-life deterioration during the past 40-50 years, a trace at this point represents evidence of significant herbicide use in the past. The attachments to the report are not included here because of the document size. The entire report can be accessed at: https://drive.google.com/drive/folders/1kXv_PgfzoXvNyjKl2YwqVT9zewYArD-W?fbclid=IwAR0LNy8YeOsXqjHxNjb8g67jpoTPgffF45Xg-28o4t1E9Y56JUXS41MipAc

As I have previously mentioned, more focused sampling, supervised by MVA, took place in the Fall of 2019. As soon as that report is ready for release I will forward it to you. We believe it will further confirm the presence of dioxin in Guam. As I indicated previously, if we do not have a response within 60 days after transmitting that report, we will assume that the rulemaking request has been denied.

Wishing you the best of the holiday season, I remain,


John B. Wells
Commander USN (ret)
Director of Litigation



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May 22, 2019

Mr. Harry Allen
Federal On-Scene Coordinator
U. S. Environmental Protection Agency
Region 9, Emergency Response Section
2445 North Palm Drive Signal Hill, CA 90755

**Subject: Guam Agent Orange Final Site Assessment Report
Yigo, Guam
TDD No.: 0002/1302-T2-R9-17-12-0001
Document Control No.: 0178-08-ACDE**

Dear Mr. Allen:

Under the Technical Direction Document (TDD) No. 0002/1302-T2-R9-17-12-0001, the United States (U.S.) Environmental Protection Agency (EPA) Region 9 Federal On-Scene Coordinator (FOSC), Harry Allen, tasked the Weston Solutions, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START) to support a soil screening assessment on Andersen Air Force Base (AAFB) in Guam (**Attachment A, Figure 1**). The screening assessment was conducted at the request of the Government of Guam and in conjunction with Navy Installations Command, Joint Region Marianas. The request was prompted by public concerns related to historical herbicide use on Guam, potentially including Herbicide Orange (HO) or its constituents. This report also includes subsequent soil sampling off of AAFB (referred to throughout this report as “off-base”) conducted at the request of Guam Environmental Protection Agency (GEPA).

The role of EPA in the soil screening assessment was to analyze split samples collected by AECOM on behalf of Joint Region Marianas to evaluate the alleged presence of contaminants of potential concern (COPCs). The suspected COPCs include the HO constituents 2, 4 - dichlorophenoxyacetic acid (2,4-D) and 2, 4, 5 - trichlorophenoxy acetic acid (2,4,5-T) used on Guam. Soil (Incremental Sampling Methodology [ISM]) samples were collected from surface soils in three predetermined areas on AAFB by AECOM in April 2018 for analysis by EMAX Laboratories, Inc. (EMAX). Split samples were provided to TestAmerica Laboratories, Inc. (TestAmerica) through the START contract.

Although the AECOM laboratory did not show any detections during their split sample analysis, split samples provided to START and analyzed by TestAmerica from Area 1 had positive detections of trace amounts of 2,4-D and 2,4,5-T. In response to these findings, additional ISM samples were collected by AECOM in December 2018 from only Area 1. AECOM collected three soil samples on December 2018 and split samples were again provided to TestAmerica. Neither lab reported detections in the second round of sampling. Split sample results from TestAmerica are provided in this Site Assessment Report.

As a result of the AAFB soil screening assessment initial Area 1 findings, GEPA requested that EPA collect surface soils at five additional locations along a historic fuel pipeline right-of-way located off AAFB.

Off-base soil sampling was conducted by START and took place over the course of 2 days, beginning November 14, 2018, and concluding November 15, 2018. The sampling event included five assessment sites located along a portion of fuel pipeline where reported herbicide spraying reportedly occurred. Additional COPCs were considered in this event including 2(2,4,5-trichlorophenoxy) propionic acid (2,4,5-TP, also known as Silvex or Fenoprop) and other herbicides reported in the test method. From the off-base soil sampling effort, soil sample TY-02 had detections for both 2,4,5-T at 37 micrograms per kilogram ($\mu\text{g}/\text{kg}$) and 2,4,5-TP at 23 $\mu\text{g}/\text{kg}$ using EPA Method 8321A.

This letter report discusses the background, site description, and split sample analysis and off-base soil sampling activities, and presents a summary of START mobilization activities. **Attachment A** provides the figures for this letter report. **Attachment B** provides a photographic log of Site conditions and emergency response activities. **Attachment C** contains the soil sampling results and data validation reports.

BACKGROUND

According to a Work Plan document drafted by AECOM titled *Limited Investigation into Alleged Herbicide Orange Use at Three Sites* (2018), the Department of Veterans Affairs requested that the U.S. Department of Defense (DoD) provide locations and dates, excluding Vietnam, where the DoD utilized herbicide agents, including HO, along with exposure data indicating where DoD personnel were most likely exposed to the COPCs. The Government of Guam requested that EPA participate in this limited investigation by assisting in the Work Plan development and analyzing split samples.

On April 23, 2018, as a component of the limited investigation, AECOM conducted a soil screening assessment into alleged chlorinated herbicide use. AECOM collected soil samples in three areas of concern (AOCs) on AAFB using ISM in accordance with the Interstate Technology and Regulatory Council guidance document ISM-1, "Incremental Sampling Methodology," February 2012. The soil samples collected by AECOM at AAFB were sent to EMAX, in Torrance, California (CA), to be split into two separate samples and then analyzed for the COPCs. EMAX performed analysis for chlorinated herbicides using EPA Method 8151A on one set of split samples. The START contracted laboratory, TestAmerica, received the second set of split soil samples from EMAX for duplicate analysis. The validated analytical report received from TestAmerica for one soil sample collected along the former fuel pipeline from Area 1 revealed trace amounts of 2,4-D, with a concentration of 380 $\mu\text{g}/\text{kg}$ and 2,4,5-T, with a concentration of 49 $\mu\text{g}/\text{kg}$. Trace amounts of 2,4-D, with a concentration of 10 $\mu\text{g}/\text{kg}$, were also detected in one soil sample collected from Area 3 and analyzed by TestAmerica. EMAX did not detect COPCs in any of the split samples analyzed for chlorinated herbicides from the AAFB sampling event.

Because only one of the two laboratories detected the presence of the COPCs in the split soil samples, an expanded resampling event of Area 1 was conducted to confirm the presence or absence of the COPCs in surface soils. AAFB sample locations are presented in **Attachment A, Figure 1**. In December 2018, Navy contractor AECOM collected soil screening samples in only Area 1 and split the samples for analysis for the COPCs. These split sample collection methods and results are described below.

In addition to Navy resampling efforts of Area 1, EPA expanded soil sampling efforts to include five separate off-base sampling locations along a former fuel pipeline located near AAFB where reported spraying of chlorinated herbicides may have occurred. START mobilization activities and soil sample collection methods and results are described below.

SPLIT SAMPLE COLLECTION

On April 23, 2018, AECOM collected surface soil samples from AOCs on AAFB using ISM. The soil screening samples collected by AECOM at AAFB were sent to EMAX in Torrance, CA, to be split into two separate samples and then analyzed for the COPCs. EMAX performed analysis for chlorinated herbicides using EPA Method 8151A on one set of split samples and TestAmerica received the second set of split soil samples from EMAX for duplicate analysis.

Positive detections were confirmed in only Area 1 from April 2018; therefore this area was resampled on December 4, 2018 by Navy subcontractor AECOM. EPA was not present during the Navy resampling event. Four samples were collected and sent to EMAX to be split between the Navy-contracted laboratory and TestAmerica. TestAmerica was contracted by START to perform analysis on the split samples received from EMAX. ISM split sample preparation was performed by EMAX, and split samples were received by TestAmerica on December 12, 2018. Split samples were analyzed by TestAmerica for herbicides in accordance with EPA Method 8151A, as before. A final analytical report was not received from the Navy regarding the results of split samples received by the Navy-contracted laboratory; therefore, those data are not reported in this document.

MOBILIZATION ACTIVITIES

On November 13, 2018, FOOSC Harry Allen and START mobilized to the Site in Guam and met with GEPA to discuss sampling locations and conduct a site walk for five sampling locations along an off-base pipeline reportedly involved in the spraying of chlorinated herbicides. Some of the pre-determined locations were modified upon arrival in Guam. A site walk followed by the sampling of five locations began on November 14, 2018 and was completed over the course of two days.

OFF-BASE SOIL SAMPLE COLLECTION

To evaluate public concerns surrounding the historical use of HO and other chlorinated herbicides, composite surface soil samples were collected at a depth of 0 to 3 inches below ground surface from five public access locations where herbicide use was reported. Composite soil samples were collected from an approximately 200-square-foot area along different sections of the pipeline at

valves and other common access points where spraying of chlorinated herbicides reportedly occurred. Composite soil samples were collected using dedicated sampling equipment and submitted to a laboratory for chlorinated herbicide analysis by EPA Method 8321A and semivolatile organic compounds (SVOCs) by EPA Method 8270D. Additionally, 20 percent (%) of the soil samples were submitted to a laboratory for herbicide analysis by EPA Method 8151A. **Attachment B** provides photographic documentation of conditions at AAFB and selected sampling activities.

On November 14, 2018, FOOSC Harry Allen, START, GEPA, and Guam Senator Therese Terlaje arrived at the first composite soil sampling site located at the Potts Junction (PJ) in Guam (**Attachment A, Figure 3**). The PJ site is located at the northwest end of the island approximately 9 kilometers (km) west of AAFB. A total of five 5-point composite surface soil samples (PJ-01, PJ-02, PJ-03, PJ-04, PJ-05) and a duplicate sample (PJ-02-20), were collected along the powerline right-of-way at five distinct areas identified as potential areas of chlorinated herbicide use (**Attachment A, Figure 3**).

On November 14, 2018, FOOSC Harry Allen, START, and GEPA arrived at the second sampling location. The site was located at Tiyan Junction (TY), which is positioned centrally on the island of Guam near the southern edge of Antonio B. Won Pat International Airport (**Attachment A, Figure 4**). The original position of this sampling location had to be modified because of site access restrictions by the Navy. Two 5-point composite surface soil samples were collected at the TY location. The first 5-point composite sample (TY-01) was collected along the pipeline on East Cesario Street in a mixed residential and commercial area (**Attachment A, Figure 5**). The second 5-point composite sample (TY-02) and a duplicate sample (TY-02-20) were collected along a portion of pipeline where a valve junction was visible on West Cesario Street, just west of Route 33 (**Attachment A, Figure 6**). The aboveground pipeline parallels the road and is located in a publicly accessible right-of-way.

On November 14, 2018, FOOSC Harry Allen and START arrived at the third sampling location. The sampling site was centrally located on the island, south of the TY sampling location in the Victoria's Ranch area of Mongmong Toto-Maite (MTM) (**Attachment A, Figure 7**). The MTM sampling location was added based on reports indicating the location was historically involved in HO spraying. One 5-point composite surface soil sample (MTM-01) was collected along the pipeline at the MTM site.

On November 15, 2018, FOOSC Harry Allen and START arrived at the Navy tie-in Pipeline (NTIP) location (**Attachment A, Figure 8**) and met with representatives from the GEPA. The site is centrally located along the western coastline of the island in the village of Piti. The pipeline system runs northwest until arriving at a large valve system on Route 11A. The pipeline then runs northeast from the valve system on the south side of Route 11A. Sub-surface pipe was installed to cross Route 11A. The pipeline resurfaces on the northwest corner of Route 11A and an unnamed road and continues north towards a Guam Power Authority facility. There is a second set of valves where the pipeline resurfaces and there is an old concrete vault in a dilapidated condition. One 5-point composite surface soil sample (NTIP-01) was collected around the pipeline valve area. A

discrete surface soil grab sample (NTIP-02) and a discrete concrete grab sample (NTIP-CS-01) were also collected per the direction of FOSC Allen.

On November 15, 2018, FOSC Allen arrived onsite with START and GEPA at the Olivares (OLV) sampling location (**Attachment A, Figure 9**). The site is located on a private residence south of the NTIP location, along the western coastline in the village of Piti. The residents of the property complained of vegetative dead spots or “dead zones,” claiming vegetation will not grow in certain areas where the pipeline runs through the property. The property is reported to have previously been a storage area for 55-gallon drums that have since been removed. Remnant metal debris was still present during the site walk. The residential structure is located at the southwest corner of the property. Potential drum metal debris were observed approximately 30 feet (ft) east of the residential property in a densely vegetated area near where the sub-surface pipeline is known to be positioned through the property. A 5-point composite surface soil sample (OLV-01) was collected at this location with a grab sample of the possible drum metal debris (OLV-DM-01). Approximately 100 feet northeast of the area where possible drum metal debris was observed, there is an open field with a mound of soil and no vegetation at the sub-surface pipeline location. The resident indicated that the cleared area is where vegetation is reportedly unable to grow. A second 5-point composite sample (OLV-02) was collected from the cleared area. The pipeline runs northeast through the property and then offsets to the north across Peaceful Valley Road. A third 5-point composite surface soil sample (OLV-03) was collected along a culvert where the pipeline was visible on the north side of Peaceful Valley Road. Photographic documentation of field activities is presented in **Attachment B**.

RESULTS

SPLIT SAMPLES

In April 2018, EMAX provided the initial split samples to TestAmerica for Areas 1 through 3. These were analyzed for herbicides using EPA SW-846 Method 8151A by TestAmerica. The validated analytical report received from TestAmerica for one soil sample collected from Area 1 revealed trace amounts of 2,4-D with a concentration of 380 µg/kg and 2,4,5-T with a concentration of 49 µg/kg. Trace amounts of 2,4-D with a concentration of 10 µg/kg were also detected in one soil sample collected from Area 3. Soil split samples from both Area 1 and Area 3 also had detections of 2,4-D; however, both 2,4-D results were considered to have high uncertainty based on quality control measures. EMAX did not detect COPCs in any of the split samples analyzed for chlorinated herbicides from the AAFB sampling event in April 2018. Laboratory analytical results are presented in **Attachment C**.

Soil screening split samples received by TestAmerica from EMAX on December 12, 2018, were analyzed for herbicides using EPA SW-846 Method 8151A by TestAmerica. A deviation from the Standard Operating Procedure (SOP) occurred with the following details: the pre-weighed ISM aliquots for samples GQ010, GQ011, GQ011MS, GQ011MSD, GQ012, and L101ISMB provided the analyst with only 30 grams in contrast to the SOP requirement of 50 grams. The laboratory notified START of the issue on December 14, 2018, and START notified the FOSC of the issue on December 15, 2018. The FOSC and START approved proceeding with the extraction process with the 30-gram aliquots that were provided. Reporting limits were adjusted accordingly due to

the lower starting mass. The following samples were diluted 5x because of the gold color of the sample extract caused by the soil matrix to preserve the integrity of the analytical instrumentation and the reporting limits were adjusted accordingly: GQ010, GQ011, GQ011MS, and GQ011 matrix spike duplicate (MSD). Because of these dilutions, the surrogate and matrix spike (MS) concentrations in the samples were reduced to a level where the recovery calculation did not provide useful information.

To better evaluate the extraction performance and lower reporting limits for all samples analyzed at the 5x dilution, Navy requested that START have TestAmerica reanalyze the sample extracts (and MS/MSD) for the split samples at the 1x dilution to standardize laboratory quality assurance/quality control (QA/QC) protocol so that the sample results from both laboratories would be comparable. TestAmerica was able to re-analyze the sample extracts for GQ010 and GQ011 at 1x dilution. No detections of COPCs were observed in either analytical report received from TestAmerica. Data for split samples analyzed by TestAmerica are presented in **Attachment C**.

OFF-BASE SOIL SAMPLES

A total of 13 soil samples and two duplicate samples were collected by START personnel and submitted to TestAmerica for SVOC analysis in accordance with EPA Method 8270D and for herbicide analysis in accordance with EPA Method 8321A. Chlorinated herbicides, including HO, were reportedly applied in the 1960s and 1970s and have experienced over 50 years of environmental degradation. Limitations in resolution for the previously utilized EPA Method 8151A may have potentially restricted the ability to detect the COPCs at the lower concentrations necessary to quantitatively assess long-term risks. Therefore, a modified analytical method, EPA Method 8321A with increased resolution, was utilized to attempt to detect herbicides at lower concentrations than was possible with the previously utilized method. To evaluate potential measurement error, 20% of samples were split and analyzed using the original EPA Method 8151A.

Using EPA Method 8321A, it was determined that sample TY-02 had detections for both 2,4,5-T at 37 µg/kg and 2,4,5-TP at 23 µg/kg. Concentrations for 2,4,5-T and 2,4,5-TP did not exceed EPA Regional Screening Levels (RSLs) for residential soil or Tropical Pacific Environmental Screening Levels (TPESLs) for unrestricted land use where groundwater is not a current or potential drinking water resource and soil depth is less than 3 meters below ground surface. The EPA RSL residential values are 630,000 µg/kg for 2,4,5-T and 510,000 µg/kg for 2,4,5-TP. The TPESL values are 12,000 µg/kg for 2,4,5-T and 870 µg/kg for 2,4,5-TP. The detections of 2,4,5-T and 2,4,5-TP were greater than the method detection limit but less than the reporting limit; therefore, the concentrations are an approximate value. No detections were observed for the 20% split samples analyzed using EPA Method 8151A for herbicides.

SVOC data revealed concentrations for sample TY-01 exceeded EPA residential RSLs for benzo[a]pyrene of 110 µg/kg with a concentration of 120 µg/kg. SVOC data also revealed sample NTIP-01 exceeded EPA RSL for Bis(2-ethylhexyl) phthalate of 39,000 µg/kg with a concentration of 43,000 µg/kg. Bis(2-ethylhexyl) phthalate is a widely used plasticizer in the manufacturing of polyvinyl chloride (PVC). Benzo[a]pyrene is a polyaromatic hydrocarbon associated with burned

ash and/or asphalt. Both analytes that are in exceedance are SVOCs unrelated to the scope of work for this Site Assessment.

CONCRETE AND DRUM METAL SAMPLE

Concrete sample NTIP-CS-01 and metal sample OLV-DM-01 were analyzed for herbicides in accordance with EPA Method 8321A and for SVOCs in accordance with EPA Method 8270D. There were no detections for herbicides or SVOCs in either the concrete sample collected in the concrete vault area at the NTIP sampling location or in the metal sample collected at the alleged OLV drum storage sampling location.

SUMMARY

The goal of this study was to sample soils for evidence of chlorinated herbicides used on Guam. In addition to performing laboratory analysis of split samples collected from the limited investigation soil screening assessment on AAFB by Navy contractors, EPA conducted an off-base soil sampling effort from November 13, 2018 to November 15, 2018, which included five sampling locations along the former fuel pipeline located off-base, where reported spraying of chlorinated herbicides, including HO, may have occurred. Detections for both 2,4,5-T and 2,4,5-TP were observed at the TY site location. The herbicide 2,4,5-T was a known component of HO and both herbicides have been banned for use in the United States since the early 1980s. The detection of the analytes 2,4,5-T and 2,4,5-TP during the November 2018 sampling event, in combination with the previous detection of 2,4,5-T and (possibly) 2,4-D from split samples collected from Area 1 located on AAFB in April 2018, indicate the presence of these residual chlorinated herbicides in the soils tested. Please feel free to contact me at (925) 948-2608 if you have any questions or concerns regarding this report.

Respectfully,

WESTON SOLUTIONS, Inc.



Amanda Wagner
START Project Scientist

Attachments:

- A – Figures
- B – Photographic Documentation
- C – Sampling Results

cc: WESTON START DCN File