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MCAS CHERRY POINT
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PROPOSED PLAN OPERABLE UNIT 1 (OU1) SITE 83 MCAS CHERRY POINT NC
3/1/2012
NAVFAC MIDLANT



1.0 INTRODUCTION

This Proposed Plan presents the Preferred Alternative Remedy for Site 83 located within **Operable Unit (OU) 1** at Marine Corps Air Station (MCAS), Cherry Point, North Carolina. Site 83 is a former pesticide mixing area that is contaminated with **polycyclic aromatic hydrocarbons (PAHs)** and pesticides. OU1 is comprised of 12 sites (i.e., Sites 14, 15, 16, 17, 18, 42, 47, 51, 52, 83, 92, and 98) based on their proximity to each other within the industrialized section of MCAS Cherry Point. Six of the OU1 sites were identified as contributing chlorinated volatile organic compounds (cVOCs) to groundwater (Sites 42, 47, 51, 52, 92, and 98) and are collectively referred to as the OU1 Central Groundwater Plume Sites. The OU1 Central Groundwater Plume Sites and Site 16 (Landfill at Sandy Branch) are being investigated separately under the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**. Five sites (Sites 14, 15, 17, 18, and 40) require **No Further Action (NFA)** and are addressed in the **Record of Decision (ROD)** OU1, Sites 14, 15, 17, 18, and 40 (CH2M HILL, 2010b). This Proposed Plan addresses only Site 83 – Building 96, Former Pesticide Mixing Area. The remedy selected for the site will serve as the final action. Because the latest data shows that there are no unacceptable human-health or ecological risks from sources attributable to the site, the Preferred Alternative Remedy in this Proposed Plan for Site 83 is NFA.

This Proposed Plan is issued by the United States Department of Navy (Navy) (i.e., Naval Facilities Engineering Command [NAVFAC] Mid-Atlantic [lead agency for site activities] and the MCAS Cherry Point **Environmental Affairs Department (EAD)**) and the **United States Environmental Protection Agency (USEPA)** Region 4 (lead regulatory agency), in consultation with the **North Carolina Department of Environment and Natural Resources (NCDENR)** (support agency). This

Mark Your Calendar for the Public Comment Period

Public Comment Period

April 10, 2012 – May 25, 2012

Submit Written Comments

The Navy, USEPA, and NCDENR will accept written comments on the Proposed Plan during the public comment period. To submit comments or obtain further information, please refer to the insert page.



Attend the Public Meeting

April 24, 2012

Time – 6:00 pm

Place – Havelock Tourist and Event Center

201 Tourist Center Drive

Havelock, North Carolina 28532

Phone: (252) 444-4348

The Navy will hold a public meeting to explain the Proposed Plan and the alternatives presented in the Feasibility Study. Verbal and written comments will also be accepted at this meeting.

Location of Information Repository:

For more information, check the MCAS Cherry Point **Environmental Restoration (ER) Program** public web site: <http://go.usa.gov/2EH> (see Section 6.3 for complete instructions)

If you do not have personal access to the internet, a hardcopy of this Proposed Plan and access to the MCAS ER Program public web site may be obtained from here:

Havelock-Craven County Library
301 Cunningham Boulevard
Havelock, North Carolina 28532
(252) 447-7509

Proposed Plan is submitted in order to fulfill the public participation requirements as required under CERCLA Section 117(a) and Section 300.430(f)(2) of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**.

This Proposed Plan summarizes information that can be found in the **Remedial Investigation (RI) Report** (TetraTech, 2002), 2009 RI Addendum (CH2M HILL, 2009a), and other documents that can be found in the **Administrative Record** for MCAS Cherry Point (see Section 6.3 for access information). Also, a glossary of key terms used in this Proposed Plan is presented in Section 8.0. Key terms are identified in **bold** print the first time they appear.

The Navy, EAD, and USEPA, in consultation with NCDENR, will make the final decision on the remedial approach for OU1 Site 83 after reviewing and considering information submitted during the 45-day **public comment period**. The Navy and MCAS Cherry Point, along with USEPA, may amend this Proposed Plan based on new

information or comments from the public; therefore, public comment on this Proposed Plan is invited and strongly encouraged. Information on how to participate in the decision-making process is presented in Section 6.0.

2.0 SITE BACKGROUND

2.1 Site Description and Background

MCAS Cherry Point is a 13,164-acre military reservation located adjacent to the city of Havelock in southeastern Craven County, North Carolina (Figure 1). The MCAS was commissioned in 1942 as an aircraft assembly and repair facility, and Fleet Readiness Center East, was added in 1943. Hazardous wastes were generated through historical aircraft assembly and maintenance operations. In 1994, MCAS Cherry Point was placed on USEPA's **National Priority List (NPL)**, which was established under CERCLA for sites contaminated by releases of hazardous substances.

OU1 is an industrial area, approximately 565 acres in size, located in the southwestern portion of MCAS Cherry Point (Figure 1). OU1 is bounded by C Street and Sandy Branch to the northwest, portions of the MCAS Cherry Point flight line and runway to the northeast and southeast, and East Prong Slocum Creek to the southwest.

The **Federal Facilities Agreement (FFA)** identified 12 sites that were to be investigated as part of 2002 RI for OU1 (NAVFAC, 2005) as follows:

- + Site 14 – Motor Transportation
- + Site 15 – Ditch and Area Behind Naval Aviation Depot (NADEP)
- + Site 16 – Landfill at Sandy Branch
- + Site 17 – Defense Reutilization and Marketing Offices (DRMO) Drainage Ditch
- + Site 18 – Facilities Maintenance Compound
- + Site 42 – Industrial Wastewater Treatment Plant
- + Site 47 – Industrial Area Sewer System
- + Site 51 – Building 137 Plating Shop
- + Site 52 – Building 133 Plating Shop and Ditch
- + Site 83 – Building 96 Former Pesticide Mixing Area
- + Site 92 – **Volatile Organic Compounds (VOCs) in Groundwater** near the Stripper Barn Site 98 – VOCs in Groundwater near Building 4032



Figure 1 – MCAS Cherry Point & OU1 Location

Site 83 (Figure 2) is the subject of this Proposed Plan. Descriptions of the site and its status are presented in Sections 3.0 and 4.0. Other OU1 sites are being or have been addressed separately under CERCLA, including the following:

- + six sites associated with the OU1 central groundwater plume;
- + Sites 14, 15, 17, 18, and 40 that are categorized as NFA sites (ROD, CH2M HILL 2010b); and
- + Site 16, which will be addressed separately with a Proposed Plan and ROD.

Site 83 is a former pesticide mixing area, approximately one acre in size, located in the southwest portion of OU1. Two buildings were formerly located at the site, Building 96 (former pesticide shop) and Building 418 (corrugated Quonset hut). These two buildings were joined with a corrugated metal roof.

Constructed before 1948, Building 96 was reportedly used for pesticide mixing. Both Building 96 and Building 418 were used for storage from 1965 to 1981, and were subsequently used for equipment storage and administrative space until

1997. A bermed concrete wash rack, located adjacent to Building 418, drained from the wash rack to a slope in the western portion of OU1 Site 83. These two buildings and their associated structures have since been removed. In early 2006, the concrete foundation and slab from Building 96 were removed during a non-CERCLA demolition project. The area around former Building 96 is largely flat and covered by asphalt/concrete, with a grassy area and steep slope to the west that leads to a damp, low-lying area at the western end of the site.

2.2 Summary of Previous Investigations and Cleanup Actions

Environmental investigations were conducted at Site 83 between 1996 and 2011. The areas of previous investigations are depicted on Figure 3. The following sections describe each investigation or action that has taken place at OU1 Site 83.

2.2.1 FMD Spill Response

In 1996, during a soil removal response action to an oil spill near a Facility Management Department (FMD) oil/water separator in the southern portion of Site 83, potential pesticide contamination was noted in the soil. Petroleum-contaminated soil was excavated to depths ranging from three to four feet below grade. Ten confirmation samples were collected and analyzed from the sides and bottom of the excavation. Based on detection of chlordane in the soil, the remedial action for the oil spill was stopped in accordance with the FMD Spill Response Summary Report (OHM, 1996).

2.2.2 SWMU Assessment

MCAS Cherry Point notified the NCDENR and the USEPA that a new SWMU had been designated at Building 96 because of former pesticide mixing at that location. The area was designated as Site 83. Soil, sediment, and groundwater samples were collected, and three monitoring wells were installed.

Pesticides and PAHs were detected in the surface soil at concentrations determined to pose an unacceptable risk to industrial workers; however, these concentrations were detected beneath the building concrete slab, so the exposure pathway was not complete. Fewer pesticides were detected with increasing soil depth. No PAHs or pesticides were detected in groundwater (Brown & Root Environmental [B&R], 1998).



Figure 2 – Site 83 Location

2.2.3 CERCLA TCRA – Debris Pile Removal

A CERCLA Time-Critical Removal Action was conducted southwest of Building 96 in 1997 related to numerous debris piles, tanks, empty storage vessels and other construction debris on the site. Asbestos-containing material, debris, and soil contaminated with petroleum hydrocarbons, asbestos, and lead were removed for off-site disposal (OHM, 1998).



Figure 3 – Investigation and Removal Action Locations

2.2.4 2002 OU1 RI

The objective of the RI (TetraTech NUS, 2002) was to collect adequate chemical data to determine the nature and extent of contamination, and to determine whether the detected constituents presented an unacceptable risk to human health or the environment at OU1. The risks were evaluated through a **Human Health Risk Assessment (HHRA)** and an **Ecological Risk Assessment (ERA)**. Data from historical site investigations were used in conjunction with additional soil, sediment, groundwater, and surface water samples collected for the RI.

The RI determined the following:

- + PAHs were identified in the soil located in the Site 83 area.
- + Pesticides in soil were detected in the area around the former pesticide shop.
- + Chlordane was identified in soil near the former surface debris pile area.
- + Two soil samples, in an area formerly used for fuel storage and downgradient from the former pesticide shop, contained lead above the USEPA **Regional Screening Levels (RSLs)** for industrial soil.

The VOCs detected above the screening criteria in groundwater are associated with the Central Groundwater Plume, and are being addressed separately. Inorganics detected above the screening criteria were determined to be naturally occurring.

2.2.5 OU1 RI Addendum

This report presented an updated evaluation of the site conceptual model, nature and extent of detected constituents in soil and groundwater, and potential risks to human health and the environment within OU1. This report focused on the OU1 Central Groundwater Plume Sites, and provided updates on the status of each OU1 site (CH2M HILL, 2009a).

2.2.6 Site 83 Soil Investigation

A soil investigation was conducted to confirm PAHs, pesticides, and lead in soil, and further characterize the vertical and horizontal extent of constituents in soil at Site 83. Lead was not detected in the samples analyzed (Rhēa, 2010).

2.2.7 2009 Additional Groundwater Investigation

Additional field activities at OU1 were conducted to further characterize the extent of the chlorinated VOC groundwater plume. One monitoring well (16GW49) was installed at Site 83. The groundwater results showed no leaching of pesticides or PAHs from the soil to the groundwater at Site 83 (CH2M HILL, 2009b).

2.2.8 Updated HHRA

Based on the data collected during the Site 83 Soil Investigation (Rhēa, 2010), an updated HHRA concluded that contact with surface soil and combined surface and subsurface soil would not result in carcinogenic risks above the USEPA

target range of 1×10^{-6} to 1×10^{-4} or noncarcinogenic hazards above the USEPA target **hazard index (HI)** of 1.0 (CH2M HILL, 2010a).

2.2.9 Supplemental Remedial Investigation

The Supplemental Remedial Investigation (SRI) (CH2M HILL, 2011a) reviewed data and findings obtained from both historical and recent investigations that had been conducted to characterize and summarize the nature and extent of detected constituents in soil and groundwater in regards to potential environmental and human health risks.

Based on the data collected at Site 83, the SRI concluded that the environmental media have been adequately characterized. Site conditions indicate that no unacceptable risks to human health or the environment exist. In addition, it was determined that previous removal actions eliminated potential future sources of contamination. The SRI recommended proceeding to an NFA Proposed Plan and ROD.

3.0 SITE CHARACTERISTICS

3.1 Site Topography

At approximately 24 feet above mean sea level (amsl), Site 83 is relatively flat. In the western portion of the site, the ground surface slopes significantly downward, in a westerly direction, towards East Prong Slocum Creek, to an elevation of approximately two feet amsl. The area west of Site 83 consists of a damp, low-lying area and dense woods.

East Prong Slocum Creek is located to the west of Site 83. East Prong Slocum Creek flows into Slocum Creek and the Neuse River. East Prong Slocum Creek has been classified by NCDENR as a Class C freshwater body.

3.2 Hydrogeology

A **paleochannel** was identified within southwestern OU1, as determined from United States Geological Survey (USGS) studies, lithologic descriptions, and groundwater levels from OU1 monitoring wells. Groundwater levels outside (northeast) of the paleochannel demonstrate a downward vertical gradient, while groundwater levels within the paleochannel area indicate an upward vertical gradient. Site 83 is located within the limits of the paleochannel.

Groundwater generally flows in a southwest direction across Site 83 towards East Prong Slocum Creek. The average horizontal hydraulic gradient is approximately 0.003 feet per foot (ft/ft), and the average horizontal groundwater velocity is approximately 0.1 feet per day (ft/day). Within the southwestern portion of OU1, where the paleochannel is present, the vertical groundwater flow direction is upward.

3.3 Nature and Extent of COPCs

The potential sources of chemicals of potential concern (COPCs) at Site 83 include former Building 96, former Building 418, the former debris piles, and former activities related to the pesticide mixing area from 1965 to 1981. Results of the historical site investigations performed at OU1 (including Site 83) from 1983 to 2000 were presented in the 2002 OU1 RI. At Site 83, soil was found to be impacted with pesticides, PAHs, and lead. However, the extent of COPCs at Site 83 was not fully defined and the data evaluated for potential risks to human health were grouped with data from other sites. As a result, an additional soil investigation, conducted in 2009 (Rhêa, 2010), and a HHRA (CH2M HILL, 2010a) were recently completed for Site 83. The 2002 OU1 RI also found that VOCs and inorganics concentrations were above groundwater screening criteria (**North Carolina Administrative Code, Title 15A, Subchapter 2L [NC 2L Standards]**) in areas adjacent to the site. However, the VOCs were determined not to be site related, but were attributable to the Central Groundwater Plume. The inorganic constituents were determined to be naturally occurring.

The soil investigation conducted in July and August 2009 included a comprehensive, grid-based sampling approach to evaluate the current nature and extent of PAHs, pesticides, and lead in soil, and to confirm the results of the historical investigations. Results were presented in the Site Soil Investigation Report, Operable Unit 1— Site 83 (Rhêa, 2010).

3.3.1 Soil

Polycyclic Aromatic Hydrocarbons

The 2009 Site 83 soil investigation analyzed soil samples for PAHs based on screening criteria exceedances in previous investigations, which included the following: benzo(a)anthracene, benzo(b)-fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, and indeno(1,2,3,-cd)pyrene.

Screening criteria included RSLs for industrial soil and **North Carolina Soil Screening Levels (NC SSLs)** for the protection of groundwater.

In the 2009 Site 83 soil investigation, benzo (a)pyrene was the most frequently detected PAH above screening criteria, with a maximum concentration of 24,000 micrograms per kilogram ($\mu\text{g}/\text{kg}$). Fourteen samples were above the industrial RSL of 210 $\mu\text{g}/\text{kg}$, and 33 samples were above the NC SSL of 59 $\mu\text{g}/\text{kg}$. Most exceedances of the screening criteria occurred in surface soil located within approximately 100 feet of former Building 96. Benzo(a)pyrene was observed above screening criteria in subsurface soil to a depth of approximately four feet, generally in the area of the former excavations. All other PAHs occurred less frequently. PAHs occurred primarily at one sample depth interval within the sample locations and did not migrate with depth.

Pesticides

The 2009 Site 83 soil investigation, also analyzed soil samples for pesticides based on screening criteria exceedances in previous investigations, which included the following: dieldrin, heptachlor epoxide, heptachlor, dichlorodipenyldichloroethene (4-4' DDE), 4,4'-dichloro-dipenyldichloroethane (4-4' DDD), 4,4'-dichloro-dipenyltrichloroethane (4-4' DDT), and chlordane. Six pesticides (heptachlor, heptachlor epoxide, 4,4'-DDD, 4,4'-DDT, dieldrin, and chlordane) were detected at concentrations above screening criterion.

Chlordane was detected above the industrial RSL (6,500 $\mu\text{g}/\text{kg}$) at seven locations and above the NC SSL (68 $\mu\text{g}/\text{kg}$) at 84 locations. Chlordane exceedances were typically limited to the surface soil (one foot), except for two sample locations where the impacted soil extended to the two-foot interval. The maximum concentration of chlordane (220,000 $\mu\text{g}/\text{kg}$) was detected in the surface soil. Chlordane generally occurred in surface soil within 80 feet west of the former building slab; however, chlordane was detected at 200,000 $\mu\text{g}/\text{kg}$ within one surface soil sample located approximately 175 feet south of the slab.

Dieldrin was detected above the industrial RSL (110 $\mu\text{g}/\text{kg}$) in seven samples and above the NC SSL (0.81 $\mu\text{g}/\text{kg}$) in 26 samples, with a maximum concentration of 1,500 $\mu\text{g}/\text{kg}$. Dieldrin was predominantly detected in surface soil in the vicinity of former Building 96.

Heptachlor, heptachlor epoxide, 4,4'-DDD, and 4,4'-DDT were detected less frequently above the industrial RSLs and NC SSLs. Heptachlor and heptachlor epoxide generally occurred where chlordane was observed. Localized occurrences of 4,4'-DDD and 4,4'-DDT exceeded the industrial RSLs (7,200 and 7,000 $\mu\text{g}/\text{kg}$, respectively) south of the former excavation areas, with maximum concentrations of 9,300 and 28,000 $\mu\text{g}/\text{kg}$, respectively.

Lead

In the 1994 investigation included in the 2002 RI, lead was detected in one area above the RSL for industrial soil. Fuel was historically stored in this area, which is downgradient from the pesticide shop. The 2009 Site 83 soil investigation did not detect lead in soil above the NC SSL and industrial RSL. The previous lead exceedance appears to have been an isolated occurrence

3.3.2 Groundwater

The installation and sampling of one monitoring well was conducted in April 2009, as documented in the technical memorandum, 2009 Additional Investigation Activities, Operable Unit 1 (CH2M HILL, 2009b). This monitoring well was installed at the site to assess the potential of leachability from soil to groundwater at Site 83.

Although PAHs and pesticides were detected above the NC SSLs, these constituents were not detected above groundwater screening criteria (NC 2L Standards). In addition, lead was not detected above screening criteria in groundwater. These results indicate that the soil COPCs are not leaching to groundwater at Site 83.

Tetrachloroethene (PCE) was the only constituent detected above groundwater screening criteria in the area of Site 83. PCE is related to the chlorinated VOC groundwater plume (Central Groundwater Plume) that originates upgradient of Site 83. PCE will be addressed as part of the Central Groundwater Plume. VOCs and inorganic constituents detected above screening criteria in groundwater adjacent to the site during the 2002 OU1 RI were determined to be related to the Central Groundwater Plume and naturally occurring, respectively.

4.0 SUMMARY OF SITE RISKS

4.1 Human Health Risk Assessment

Site 83 was evaluated for potential risks to human health as part of the quantitative risk assessment documented in the 2002 OU1 RI for all of OU1. This baseline HHRA was performed to evaluate potential health risks for all media at OU1.

In the 2002 OU1 RI, Site 83 was grouped with adjacent sites to assess potential risks from exposure to soil. An Updated HHRA (CH2M HILL, 2010a) was conducted based on the 2009 Site 83 soil investigation (Rhēa, 2010) results to evaluate the magnitude and probability of actual or potential harm to human health posed by the PAHs and pesticides in the site soil. The updated HHRA supersedes the HHRA performed as part of the 2002 OU1 RI in regards to the exposure to soil.

4.1.1 Baseline HHRA

A baseline HHRA was performed to evaluate potential health risks for all media at OU1. Potential excess lifetime cancer risks and non-cancer HIs were calculated for several potential receptors, including construction workers, maintenance workers, full-time employees (including military personnel), adolescent trespassers, adult recreational users, and future child and adult residents.

The OU1 baseline HHRA for the 2002 OU1 RI concluded the following:

- + **Soil** – Soil samples from Sites 16, 83, and BRAC Site 5 were grouped together. Calculated cancer risks for exposure to the soil group exceeded USEPA’s target cancer risk range. The calculated HI for construction workers and child residents exceeded USEPA’s target HI of 1.0.
- + **Groundwater** – The calculated HI and cancer risk for future potable use of the **surficial aquifer** were driven by samples collected elsewhere in OU1, and not by the groundwater sample results from Site 83.
- + **Sediment** – Estimated cancer risk for exposure to OU1 sediment by child residents and lifetime residents exceeded USEPA’s target levels; however, sediment samples within East Prong Slocum Creek adjacent to Site 83 did not

contain the contamination associated with the calculated risk.

- + **Surface Water** – HI and cancer risk levels were within EPA’s acceptable levels for OU1 surface water.

4.1.2 Updated HHRA for Soil

An Updated HHRA (CH2M HILL, 2010a) was prepared for Site 83 using the data collected during the additional soil investigation study. Because

What is Human Health Risk and How is it Calculated?

A human health risk assessment estimates the "baseline risk." This is an estimate of the likelihood of health problems occurring if no cleanup action was taken at a site. To estimate the baseline risk at a site, the Navy performs the following four-step process:

- Step 1: Analyze Contamination**
- Step 2: Estimate Exposure**
- Step 3: Assess Potential Health Dangers**
- Step 4: Characterize Site Risk**

In **Step 1**, the Navy looks at the concentrations of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). Comparisons between site-specific concentrations and concentrations reported in past studies help the Navy to determine which contaminants are most likely to pose the greatest threat to human health.

In **Step 2**, the Navy considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency (how often) and length of exposure. Using this information, the Navy calculates a "reasonable maximum exposure (RME)" scenario that portrays the highest level of human exposure that could reasonably be expected to occur.

In **Step 3**, the Navy uses the information from Step 2 combined with information on the toxicity of each chemical to assess potential health risks. The Navy considers two types of risk: (1) cancer risk, and (2) noncancer risk. The likelihood of any kind of cancer resulting from a contaminated site is generally expressed as an upper bound probability; for example, a "1 in 10,000 chance." In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than normally would be expected to from all other causes. For noncancer health effects, the Navy calculates a "hazard index." The hazard index represents the ratio between the "reference dose," the dosage at which no adverse health effects are expected to occur, and the "reasonable maximum exposure," the estimated maximum exposure level for a given category of individuals coming into contact with contaminants at the Site. The key concept is that a "threshold level" (measured usually as a hazard index of less than 1) exists below which noncancer health effects are no longer predicted.

In **Step 4**, the Navy determines whether site risks are great enough to cause health problems for people at or near the site. The results of the three previous steps are combined, evaluated, and summarized. The Navy adds up the potential risks from the individual contaminants and exposure pathways and calculates a total site risk.

sampling conducted during the additional soil investigation study was representative of current site conditions and overlapped previous sampling areas, soil samples collected during the 2002 OU1 RI were not included in the updated HHRA. Human health risks associated with exposure to constituents detected in soil were evaluated for potential exposure pathways based on existing site conditions and current and potential future site use.

The Updated HHRA used current risk assessment methods, updated as necessary from the risk assessment methodology used for the 2002 OU1 RI HHRA. The screening levels used to select the COPCs for further quantitative evaluation in the risk assessment were updated from the values used in the 2002 OU1 RI (the USEPA Region 9 preliminary remediation goals) to the current USEPA RSL values (USEPA, 2010). The exposure factors used to calculate daily intake values were updated to currently used values, where necessary. Although the 2002 OU1 RI evaluated soils at Sites 16, 83, and BRAC Site 5 as one soil group, the Updated HHRA evaluated only soil samples collected at Site 83.

Based on the site topography, the site was evaluated as two exposure units, the “Upland Area” and the “Lowland Area,” in the Updated HHRA (CH2M HILL, 2010a). The Upland Area consists of the flat area surrounding and including the former Building 96 location. The Lowland Area consists of the space west of the former Building 96 location and is covered by vegetation, including the slope adjacent to the Upland Area and the flat area at the bottom of the slope. The data were grouped according to these two exposure units for evaluation in the Updated HHRA.

All detected pesticides and PAHs in the Upland Area surface soil and the combined surface and subsurface soil exceeded the residential soil RSLs, with the exception of heptachlor epoxide, and were retained as COPCs. In the Lowland Area, all detected pesticides and PAHs in surface soil and combined surface and subsurface soil exceeded the residential soil RSLs, with the exception of benzo(a)anthracene, and were retained as COPCs.

The Updated HHRA evaluated potential exposures associated with site soil for maintenance and construction workers, adolescent trespassers, full time employees, adult resident (six-year exposure), child/adult resident (30-year exposure), and child

resident receptors with respect to current and future land use scenarios. Potential soil exposures included incidental ingestion of and dermal contact with soil.

The results of the Updated HHRA indicate that for both current and potential future land use, Site 83 does not pose unacceptable health risks to any of the receptors evaluated. Contact with surface soil and combined surface and subsurface soil would not result in non-carcinogenic hazards above the USEPA target HI of 1 or carcinogenic risks above the USEPA target range of 1×10^{-6} to 1×10^{-4} . As a result, the USEPA and NCDENR agreed additional human health investigations or related actions at Site 83 were deemed unnecessary.

4.2 Ecological Risk Assessment

Potential ecological risks were evaluated in a Step 3A Addendum (CH2M HILL, 2003), a **Baseline Ecological Risk Assessment (BERA)** (CH2M HILL, 2005), and a Post-BERA Investigation Work Plan (CH2M HILL, 2006). The Step 3a Addendum further refined receptor exposure scenarios, delineated specific sources for COPCs, delineated the spatial extent of COPCs, developed a better understanding of potential risks to ecological receptors, and evaluated potential off-site COPC releases to Slocum Creek. The report identified portions of Site 83 as primary areas posing potential ecological risk that should receive further evaluation through a BERA. Maximum and mean soil exposure point concentrations and estimate dose received by receptors were compared to benchmark values that are protective of ecological receptors.

The results of the Step 3a Addendum were used to present the baseline problem formulation (Step 3b) in the BERA Work Plan (CH2M HILL, 2004). This plan included a refined conceptual site model (CSM), assessment and measurement endpoints, risk hypotheses, and plans for site-specific studies that included targeted/supplemental media sampling and toxicity testing, and ecological surveys in aquatic habitats of Sandy Branch and associated terrestrial habitats.

Additional soil samples and toxicity samples from small insects were collected at Site 83 to fill data gaps and address areas of uncertainty. No unacceptable risks were identified to the insectivorous mammalian species (CH2M HILL, 2005).

The Post-BERA Investigation Work Plan concluded that the poor quality of the soil and the steepness of the hillside of Site 83 make it a poor habitat for soil invertebrates. Potential ecological risks were determined to be not significant in the area. Trees in the area stabilize the soil, reducing erosion and subsequent deposition into East Prong Slocum Creek. As a result, the USEPA and NCDENR agreed that additional ecological investigations or related actions at Site 83 were unnecessary.

5.0 SCOPE AND ROLE OF RESPONSE ACTION

Based on the available data, there are no unacceptable human-health or ecological risks as determined during the Updated HHRA and SRI from sources attributable to Site 83. The Preferred Alternative Remedy identified for Site 83 is NFA. The remedy chosen through the Proposed Plan will be the final action for this site under CERCLA. The Site 83 remedy will not include or affect any other sites or operable units at MCAS Cherry Point. The Navy concluded that NFA is the appropriate remedy because there is no remaining unacceptable risk to human health or the environment posed by Site 83.

Under the Proposed Action, no response action will be performed at the site and no restrictions on land use would be imposed. Based on the evaluation of the data and information currently available, the Navy concludes that the Proposed Action meets the statutory requirements of CERCLA for protection of human health and the environment.

6.0 PUBLIC PARTICIPATION

Public participation at MCAS Cherry Point includes a **Restoration Advisory Board (RAB)**, public meetings, a public information repository, newsletters, fact sheets, public notices, and an Environmental Restoration Program web site. The Community Involvement Plan for MCAS Cherry Point provides detailed information on community participation for the ER Program. The RAB was formed in December 1995 and consists of community members and representatives of the USEPA, NCDENR, NAVFAC Mid-Atlantic, and MCAS Cherry Point. RAB meetings are usually held quarterly and are open to the public to provide an opportunity for comments and questions. The OU1 investigations, findings, and the potential

remedial approaches have been presented and discussed at multiple RAB meetings.

Nearby residents and other interested parties are strongly encouraged to use the comment period to relay any questions and concerns about OU1 Site 83 and the Proposed Action. The Navy will summarize and respond to comments in a responsiveness summary, which will become part of the official ROD.

This Proposed Plan fulfills the public participation requirements of CERCLA Section 117(a), which specifies that the lead agency (i.e., the Navy) must publish a plan outlining any remedial alternatives evaluated or removal actions completed for the site and identifying the Proposed Action. All documents referenced in this Proposed Plan are available for public review as part of the Administrative Record for MCAS Cherry Point. Instructions for accessing the Administrative Record are provided in Section 6.3.

6.1 Public Comment Period

The public comment period for the Proposed Plan provides an opportunity for the community to provide input regarding the proposed action for Site 83, Building 96 Former Pesticide Mixing Area. The public comment period will be from April 10 2012 through May 25, 2012, and a public meeting will be held on April 24, 2012 at 6:00 p.m. at the Havelock Tourist and Event Center. All interested parties are encouraged to participate in the Navy's CERCLA activities at MCAS Cherry Point. The meeting will provide an additional opportunity to submit comments on the Proposed Plan. A public notice will be published in area newspapers announcing the availability of the Proposed Plan and the public comment period. In addition, a public notice will also be published in area newspapers announcing the date, time, and location of the public meeting.

Written comments must be postmarked no later than May 25, 2012. The back page included with this Proposed Plan may be used to provide written comments. Please fold the page and add postage where indicated. The use of this form is not required.

6.2 Record of Decision

After the public comment period, the Navy and MCAS Cherry Point, in conjunction with the USEPA and with concurrence from NCDENR, will

determine whether the NFA decision proposed in this plan should be modified on the basis of comments received. Any required modifications will be made by the Navy. If modifications substantially change the Proposed Action, additional public comments may be requested. If not, the Navy, MCAS Cherry Point, and USEPA will prepare and sign the ROD, with concurrence from the State of North Carolina. The ROD will detail the Proposed Action chosen for the site, and will include the Navy's responses to comments received from the public.

During the comment period, interested parties may submit written comments to the following addresses:

Ms. Nicole S. Cowand, P.E.
Remedial Project Manager
NAVFAC Mid-Atlantic
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6.3 Available Information

The Community Involvement Plan and technical reports supporting the remedial decision are available for public download via the MCAS Cherry Point ERP Public web site, and can be accessed at <http://go.usa.gov/2EH>, by selecting the "[Administrative Record File](#)" link.

Note: Some internet browsers do not include Department of Defense (DoD) digital security certificates, which may result in a security warning recommending the user not to proceed. Though there is no harm in proceeding, to avoid such security alerts, first download the DoD Root CA Certificates by following the instructions at the following web site: <http://dodpki.c3pki.chamb.disa.mil/rootca.html>.

If you do not have personal access to the MCAS Cherry Point ERP public web site, a hardcopy version of this Proposed Plan may be obtained at the Havelock-Craven County Library (301 Cunningham Boulevard, Havelock, North Carolina 28532) during normal business hours. The library can be contacted at (252) 447-7509.

7.0 REFERENCES

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8.0 GLOSSARY

Administrative Record: A compilation of documents and information for CERCLA sites that is made available to the public for review.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A Federal law passed in 1980 (United States Code Title 42, Chapter 103), commonly referred to as the "Superfund" Program, that regulates and provides for cleanup and emergency response in connection with numerous existing, inactive hazardous waste disposal sites that endanger public health and safety or the environment. CERCLA was amended by Superfund Amendments and Reauthorization Act (SARA) in 1986.

Environmental Affairs Department (EAD): A department within Marine Corps Air Station Cherry Point that exists to sustain and enhance

mission readiness through compliance with relevant laws and regulations, prevention of pollution, and continual program improvement through an environmental management system.

Ecological Risk Assessment (ERA): An evaluation of the risk posed to ecological receptors (i.e., plants and animals) if remedial activities are not performed at the site.

Environmental Restoration (ER) Program: Established in 1984 to help identify, investigate, and cleanup contamination on Department of Defense (DOD) properties; conducted under the auspices of CERCLA of 1980 and SARA of 1986; the DOD equivalent to the USEPA.

Federal Facility Agreement (FFA): An agreement between the USEPA and DoD facilities (i.e., MCAS Cherry Point). The general purposes of the FFA are as follows:

1. Ensure that the environmental impacts associated with past and present activities at the site are thoroughly investigated and appropriate remedial action taken as necessary to protect the public health, welfare, and the environment.
2. Establish a procedural framework and schedule for developing, implementing and monitoring appropriate response actions at the site in accordance with CERCLA/SARA, the NCP, Superfund guidance and policy, RCRA, RCRA guidance and policy.
3. Facilitate cooperation, exchange of information and participation of the parties in such actions.

Feasibility Study (FS): An analysis in which the data collected during the Remedial Investigation (RI) are used to develop and evaluate a list of potential remediation alternatives. A detailed technical evaluation is performed on each remedial alternative that considers the nine evaluation criteria specified by USEPA guidance.

Groundwater: The supply of freshwater beneath the Earth's surface that occurs in the pore spaces between soil grains or within fractures in geologic formations that are fully saturated.

Hazard Index (HI): For non-cancer health effects, the Navy calculates a "hazard index." The hazard index represents the ratio between the "reference dose," the dosage at which no adverse health effects are expected to occur, and the "reasonable maximum exposure," the estimated

maximum exposure level for a given category of individuals coming into contact with contaminants at the Site. The key concept is that a "threshold level" (measured usually as a hazard index of less than 1) exists below which non-cancer health effects are no longer predicted.

Human Health Risk Assessment (HHRA): A qualitative and quantitative evaluation of the risk posed to human health by the presence of specific pollutants. Elements include the following: identification of the hazardous substances present in the environmental media; assessment of exposure and exposure pathways; assessment of the toxicity of the site's hazardous substances; and, characterization of human health risks.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The Federal regulations that guide determination of the sites to be corrected under both the Superfund (CERCLA) program and the program to prevent or control spills into surface waters or elsewhere.

National Priority List (NPL): A list developed by USEPA of uncontrolled hazardous substance release sites in the United States that are considered priorities for long-term remedial evaluation and response.

No Further Action (NFA): Remedial Action in which no response action is performed and no restrictions on land use are necessary.

North Carolina Department of Environment and Natural Resources (NCDENR): The state agency responsible for administration and enforcement of environmental regulations in North Carolina.

North Carolina 2L Groundwater Quality Standard (NC 2L Standards): The Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina, North Carolina Administrative Code, Title 15A, NCDENR Division of Water Quality, Subchapter 2L.

North Carolina Soil Screening Levels (NC SSLs): Calculated soil contaminant concentrations for the protection of the groundwaters of North Carolina. They reflect the levels of each chemical above which the potential exists for the contaminant to migrate through the soil and contaminate the groundwater. The SSLs are calculated by multiplying the North Carolina Groundwater Quality Standards (NC 2L

Standards) by soil contaminant fate and transport factors.

Operable Unit (OU): One or more potentially contaminated sites that have been grouped together due to their proximity to each other or due to similarity of contamination.

Paleochannel: A remnant of a former river or stream channel that has been filled and overlain by younger sediments.

Polycyclic Aromatic Hydrocarbons (PAHs): Hydrocarbons with multiple benzene rings. PAHs are typical compounds found in asphalt, fuel, oils, and greases.

Public Comment Period: The time allowed for the members of a potentially affected community to express views and concerns regarding an action proposed to be taken by USEPA, such as a rulemaking, permit, or Superfund remedy selection.

Record of Decision (ROD): A legal document that describes the cleanup action or remedy selected for a site, the basis for choosing that remedy, and public comments that were considered regarding the selected remedy.

Regional Screening Levels (RSLs): Developed by the EPA, RSLs are chemical-specific concentrations for individual contaminants in air, drinking water, and soil that may warrant further investigation or site cleanup. These levels are based upon human health risk.

Remedial Investigation (RI): A study in support of the selection of a remedy at a site where hazardous substances have been released. The RI identifies the nature and extent of contamination, and analyzes human health and ecological risk associated with the detected constituents.

Resource Conservation and Recovery Act (RCRA): RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), requires the establishment of a management system for hazardous waste (Subtitle C), non-hazardous solid waste (Subtitle D), and underground storage tanks (Subtitle I). RCRA also provides corrective action authority for cleanup of pre-RCRA hazardous waste management units and non-hazardous solid waste management units.

Restoration Advisory Board (RAB): An advisory group for the restoration process with members from the public, the Navy, and regulatory

agencies. The purpose of the RAB is to gain effective input from the stakeholders on cleanup activities and increase installation responsiveness to the community's environmental restoration concerns.

Solid Waste Management Unit (SWMU): Any discernible unit in which wastes have been placed at any time, regardless of whether the unit was designed to accept solid waste or hazardous waste, and from which contaminants may migrate. SMWUs include any area at a facility at which solid wastes have been routinely and systematically released. Only past releases from SWMUs that also meet the definition of CERCLA release are eligible for remediation through the ER Program.

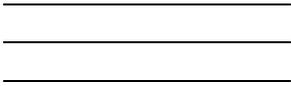
Surficial Aquifer: An aquifer is a saturated, permeable geologic formation that is capable of yielding water in usable quantities via a well. The Surficial Aquifer is the uppermost aquifer in the Coastal Plain of North Carolina, where MCAS Cherry Point is located. The Surficial Aquifer is unconfined, meaning that its upper surface is the water table rather than a confining unit.

Time Critical Removal Action (TCRA): Removal action under the CERCLA removal authority to achieve quick, protective results at Superfund sites, consistent with all legal requirements, including public participation.

United States Environmental Protection Agency (USEPA): The Federal agency responsible for administration and enforcement of CERCLA (and other Federal environmental statutes and regulations).

Volatile Organic Compounds (VOCs): Organic compounds (i.e., carbon-containing) that readily evaporate, or volatilize.

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