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FINAL RECORD OF DECISION AMENDMENT OPERABLE UNIT 2 (OU 2), SITE 10, HOT
SPOT 2 MCAS CHERRY POINT NC
07/01/2011
RHEA ENGINEERS AND CONSULTANTS INC

**FINAL
RECORD OF DECISION
AMENDMENT**

**OPERABLE UNIT 2, SITE 10, HOT SPOT 2
MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA**



July 2011

**Contract No. N40085-08-D-1409
CTO: 0001**

Rhēa Project No. 383

Prepared for:



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1.0 DECLARATION

1.1 Site Name and Location

This Amended Record of Decision (ROD) presents a revision to the selected remedy for the **volatile organic compound (VOC)**-contaminated soil area located within **Operable Unit (OU) 2 - Site 10, Hot Spot 2** at Marine Corps Air Station (MCAS), Cherry Point, North Carolina. The amended remedy was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on information contained in the Administrative Record for the site. Information not specifically summarized in this Amended ROD but contained in the Administrative Record has been considered and is relevant to the selection of the remedy. Thus, the Amended ROD is based upon and relies upon the entire Administrative Record file for the site in making the remedy selection decision.

MCAS Cherry Point was placed on the National Priorities List (NPL) on December 16, 1994 (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] National Superfund database identification number: NC1170027261). As a result of the NPL listing and pursuant to CERCLA, the United States Environmental Protection Agency (USEPA) Region 4, the North Carolina Department of Environment and Natural Resources (NCDENR), the United States Department of the Navy (Navy), and the Marine Corps entered into a **Federal Facility Agreement (FFA)**¹ (Reference [Ref.] 1) for MCAS Cherry Point in January 2005. The primary purpose of the **FFA** is to ensure that the environmental impacts

¹**Bold blue text** identifies detailed site information available in the Administrative Record and listed in the References table in Section 9.

associated with past and present activities at the Base are thoroughly investigated. The Environmental Restoration Program (ERP) is responsible for ensuring that appropriate CERCLA response alternatives are developed and implemented as necessary to protect public health, welfare, and the environment.

The Navy is the lead agency and provides funding for site cleanups at MCAS Cherry Point. The remedy set forth in this Amended ROD has been selected by the Navy (consisting of the Naval Facilities Engineering Command [NAVFAC], Mid-Atlantic Division, the MCAS Cherry Point Environmental Affairs Department [EAD]), and the USEPA Region 4. NCDENR, the support regulatory agency, actively participated throughout the investigation process and, hence, has reviewed this Amended ROD and the materials on which it is based and concurs with the Amended Remedy.

1.2 Statement of Basis and Purpose

The initial remedy was selected in the August **1999 Record of Decision (ROD)** (Ref. 2). The remedy presented in the **1999 ROD** stipulated in-situ soil treatment by **soil vapor extraction (SVE)** at known major soil “hot spots” (secondary source areas) that were contaminated with organics. Four hot spot areas were identified for remediation within OU2 at the Site 10 (old sanitary landfill) area. Hot Spot 2 falls entirely within this landfill. The in-situ SVE system’s low rate of contaminant removal was no longer contributing to the achievement of the cleanup goals at Hot Spot 2. The resulting levels remained above the remediation goals set forth in the **1999 ROD**; therefore, the system was taken off-line and dismantled. An amendment to the **1999 ROD** is required to document a fundamental change for the remediation of Hot Spot 2. The groundwater remedy as defined in the **1999 ROD** remains unchanged.

1.3 Description of the Amended Soil Remedy

The selected amended remedy for Site 10, Hot Spot 2 is a **Soil Cover with Groundwater Monitoring**. This remedy will include the installation of a soil cover over areas that exceed the North Carolina (NC) soil screening levels (SSLs) to prevent direct contact and to limit infiltration and migration of soil/waste contamination to groundwater. The cover will consist of a minimum of two-foot-thick clean backfill material and will extend a minimum of 10 feet beyond the area of concern.

1 DECLARATION

Although the groundwater remedy selected in the **1999 ROD** has not been affected by this change to the soil remedy, the following will also be implemented:

- Groundwater monitoring will be modified to include comparison of groundwater results to surface water action levels to ensure protection of Slocum Creek.

The existing **1999 ROD** OU2 remedy components for Land Use Controls (LUCs) and Long-Term Monitoring (LTM) will continue to be maintained.

1.4 Statutory Determinations

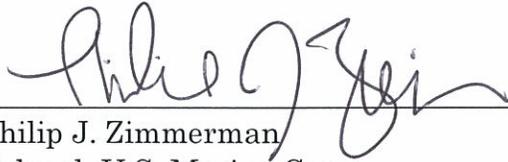
The Selected Remedy meets the statutory requirements and is protective of human health and the environment, complies with federal and state regulations that are applicable or relevant and appropriate to the remedial action and is cost-effective. The statutory preference for treatment will not be satisfied because the soil will not be treated. The soil area is located within the waste materials of the inactive landfill which is not conducive for treatment. Because this remedy will result in pollutants or contaminants remaining onsite in soil above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after the initiation of the remedial action to ensure that the remedy is protective of human health and the environment.

1.5 Administrative Record

The public participation requirements of §117 of CERCLA and §300.435(c)(2)(ii) of the NCP were satisfied by the issuance of the **Proposed Plan** (Ref. 3) which supports this amended ROD. The public review period began on April 11, 2011 and concluded on June 10, 2011 with a public meeting being held on April 27, 2011. This ROD Amendment and technical reports supporting the remedial decision-making process for OU2 are available for download via the MCAS Cherry Point ERP Public web site, and can be accessed at <http://go.usa.gov/2EH>, then by clicking the "[Administrative Record File](#)" link. If you do not have personal access to the internet, access to the MCAS Cherry Point ERP public web site and a hardcopy version of the ROD Amendment may be obtained at the Havelock-Craven County Library (301 Cunningham Boulevard, Havelock, North Carolina 28532) during normal business hours.

1 DECLARATION

1.6 Authorizing Signature



Philip J. Zimmerman
Colonel, U.S. Marine Corps
Commanding Officer
MCAS Cherry Point

20110907
Date

The North Carolina Department of the Environment and Natural Resources concurs:



Dexter R. Matthews, Director
Division of Waste Management
North Carolina Department of Environment and Natural Resources

9-26-11
Date



Franklin E. Hill, Director
Superfund Division
U.S. Environmental Protection Agency Region 4

9/8/11
Date

2.0 SITE BACKGROUND

2.1 Facility Description

MCAS Cherry Point (Figure 1) is a military installation in southeastern Craven County, North Carolina, just north of the town of Havelock. The Air Station encompasses approximately 13,164 acres and is situated on a peninsula north of Core and Bogue sounds and south of the Neuse River. It is bound on the east by Hancock Creek, on the south by North Carolina Highway 101, on the west by an irregular boundary line approximately three-quarters of a mile west of Slocum Creek, and on the north by the Neuse River.

The MCAS was commissioned in 1942 to maintain and support facilities, services, and materials of a Marine Aircraft Wing (MAW) and other activities and units as designated by the Commandant of the Marine Corps. Tenants of the Air Station include the second MAW, the Fleet Readiness Center East, or FRCE (formerly known as the Naval Aviation Depot [NADEP]), the Combat Service Support Detachment 21 of the Second Force Service Support Group (2nd FSSG), the Naval Air Maintenance Training Group Detachment, and the Defense Reutilization and Marketing Office (DRMO). The Air Station has facilities for training and support of the Fleet Marine Force (FMF) Atlantic aviation units and is also designated as a primary aviation supply point.

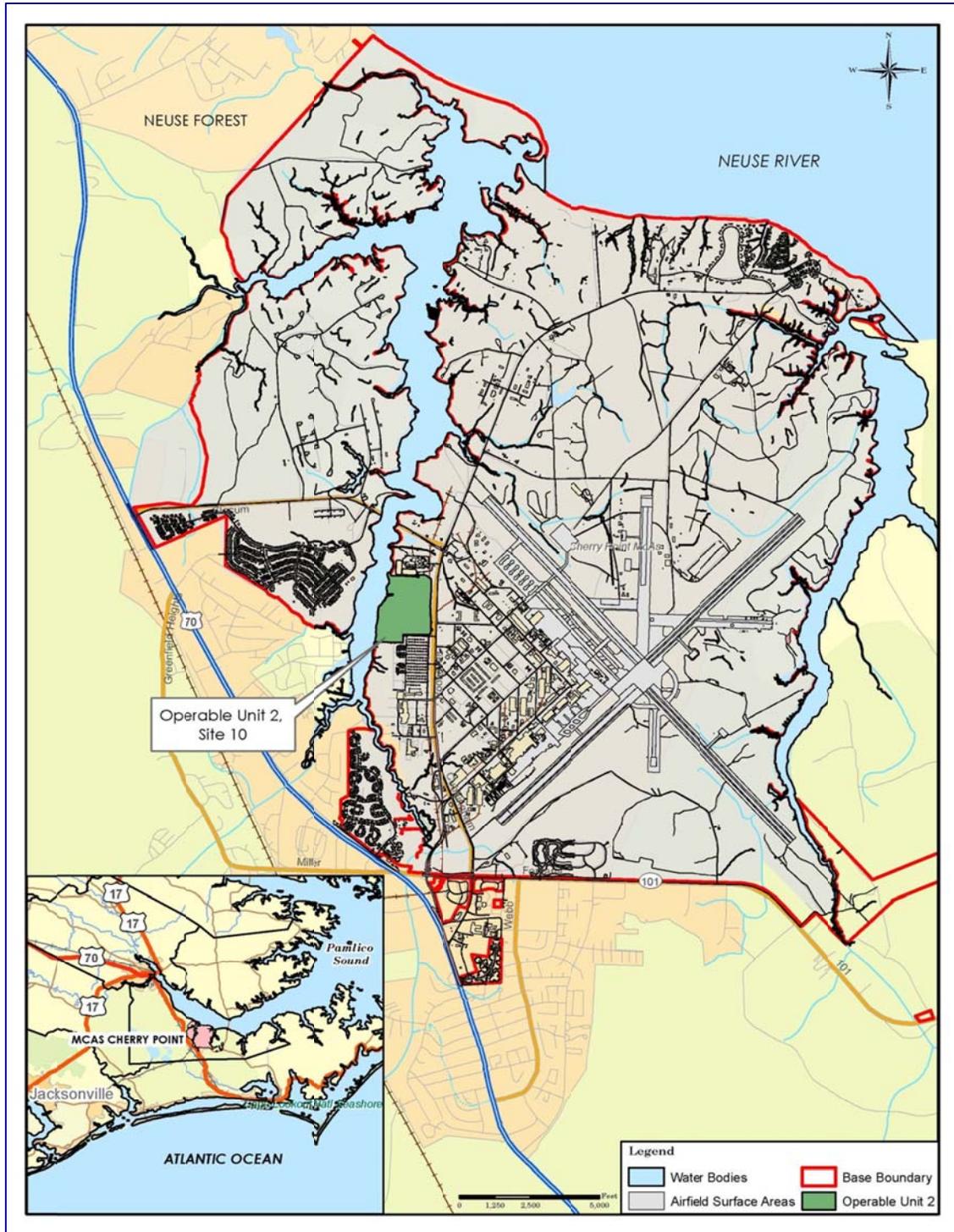
2.2 Site History

Site 10 (Figure 2), the Old Sanitary Landfill, is located west of Roosevelt Boulevard, south of the sewage treatment plant (STP), and east of Slocum Creek. Site 10 is divided by Turkey Gut, a small perennial stream that flows northwest into Slocum Creek. The site consists of a sanitary landfill, former sludge impoundments, and a former drum storage area. The sanitary landfill is the largest part of the site and covers approximately 40 acres. The Site 10 Old Sanitary Landfill served as the primary disposal site at the Air Station from 1955 until the early to mid-1980s. Contaminated material and petroleum, oil, and lubricants (POLs) were land-applied, burned, stored in unlined pits, and buried at the landfill.

The OU2, Site 10 area was investigated and characterized between 1994 and 1996. The results of these investigation activities were presented in the **Remedial Investigation (RI)** (Ref. 4).

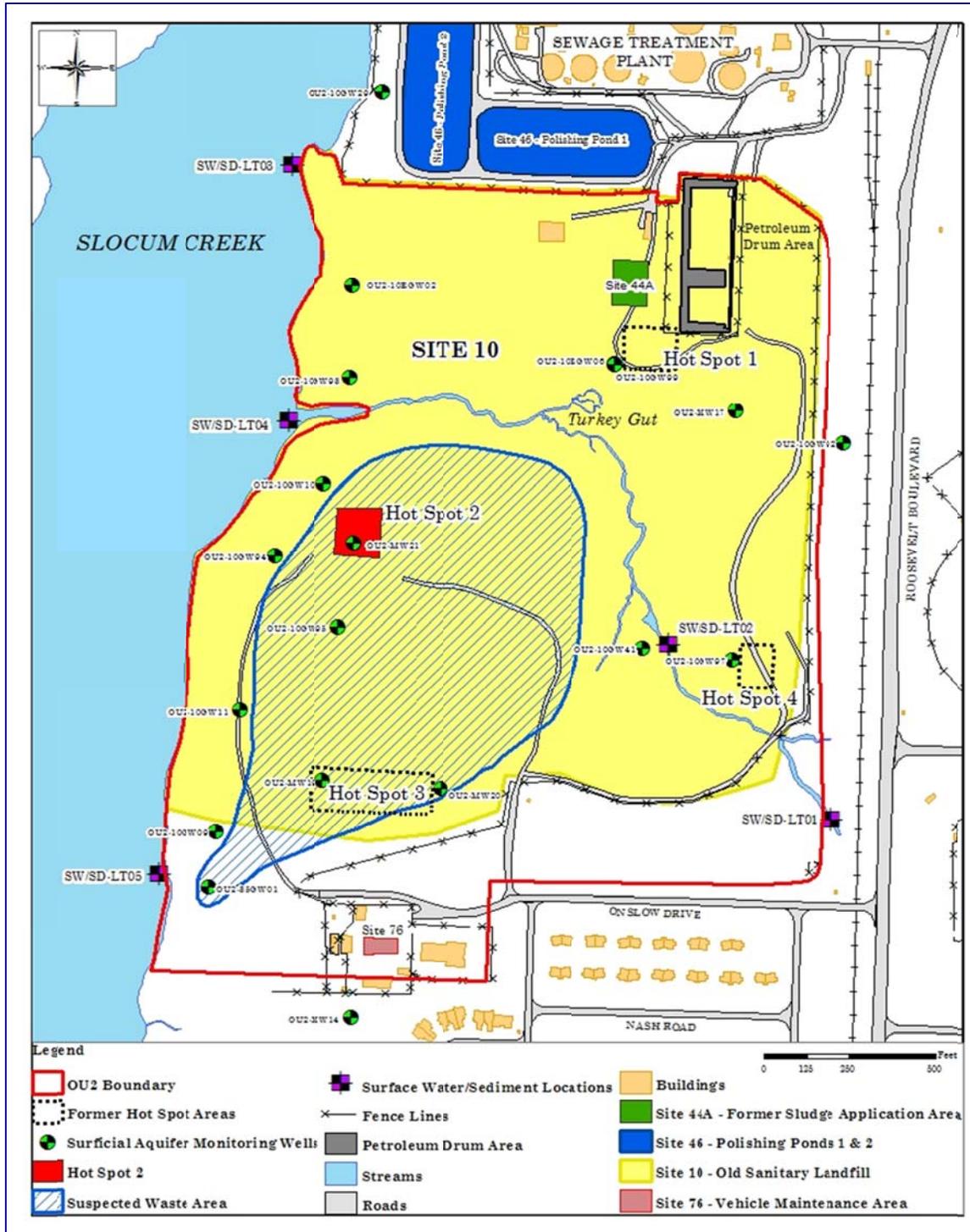
2 SITE BACKGROUND

FIGURE 1
MCAS Cherry Point OU2 Location Map



2 SITE BACKGROUND

FIGURE 2
Site 10 Hot Spot 2 Location Map



2 SITE BACKGROUND

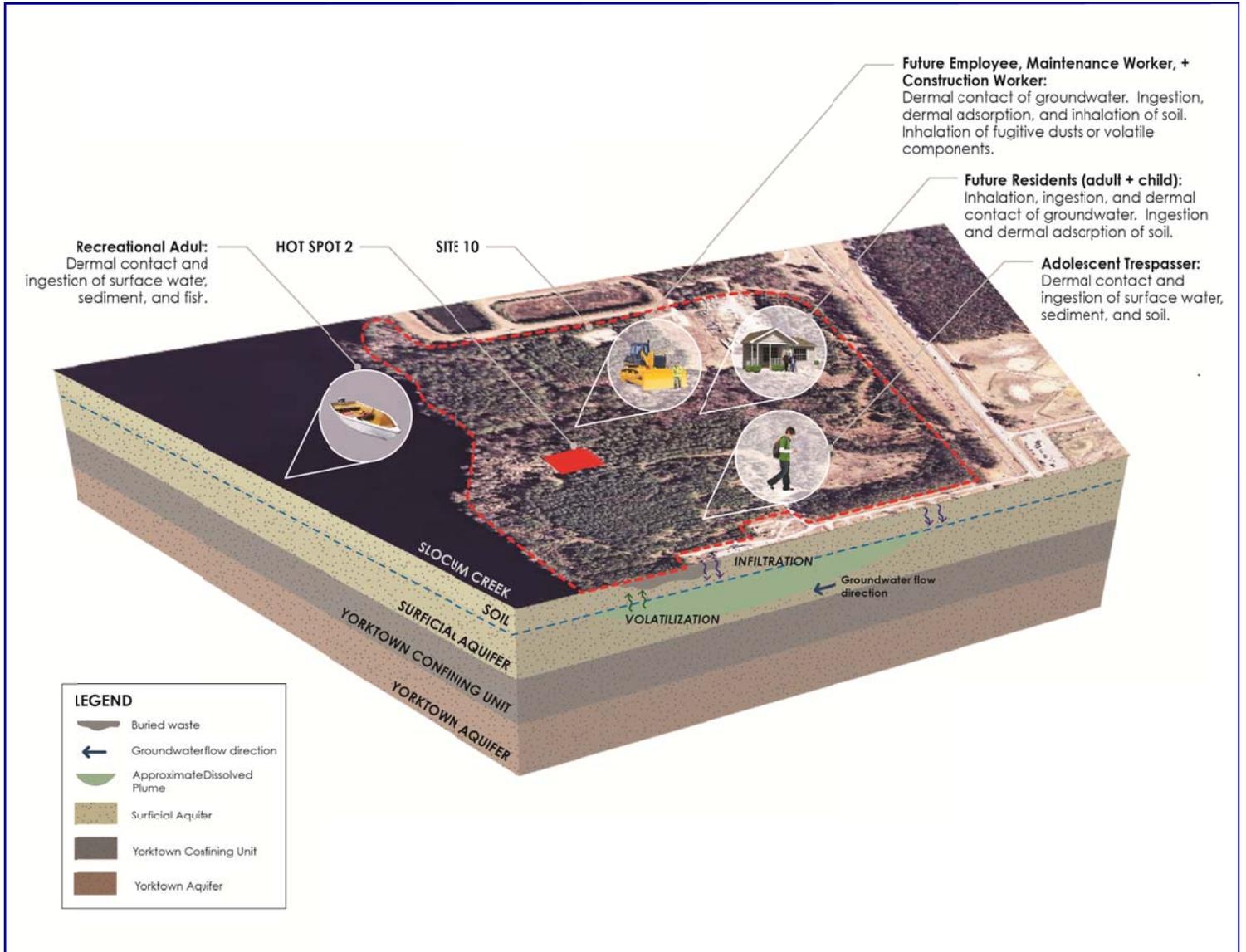
Groundwater beneath the site was encountered in the surficial aquifer at approximately 7 to 22 feet below ground surface (bgs), and water level elevations ranged from approximately 2.6 to 22 feet mean sea level (MSL). Data from boring logs presented in the **RI** indicate that waste may have been buried within 125 feet or less of Slocum Creek, although most of the waste disposal likely occurred approximately 300 feet or more from Slocum Creek. Groundwater and surface water from Turkey Gut discharges to Slocum Creek. Based on the results of continual surface water sampling as defined in the LTM Work Plan (Ref. 5), Slocum Creek was determined to not be adversely affected by these discharges. Additionally, significant primary and secondary evidence supports the Natural Attenuation of groundwater (that is, several plume components were stable or decreasing in areal extent over time, and a gradual decline in concentrations of many COCs) was occurring.

Based on characterization results, a **Feasibility Study (FS)** (Ref. 6) and **Proposed Remedial Action Plan (PRAP)** (Ref. 7) identified remedial technologies and recommended strategies for cleanup and site closure. VOCs were elevated in soil hot spots (Hot Spots 1, 2, 3, and 4) (Figure 2) at concentrations indicating a potential for leaching to groundwater.

The **RI** evaluated the site human health and ecological risks associated with OU2. Identified receptors under 1999 land use conditions included maintenance workers, trespassers, and recreational users of Slocum Creek. In addition, potential future land use conditions were also considered for residents, full-time employees, and construction workers. The **RI** concluded that unacceptable risks were identified from exposure to surface soil for future residents. The **RI** also concluded that there was no significant risk posed to ecological receptors from OU2. Figure 3 is a graphical depiction of the Conceptual Site Model (CSM).

2 SITE BACKGROUND

FIGURE 3
Conceptual Site Model



2.2.1 Original Selected Remedy

The original Remedial Action Objectives (RAOs) for OU2, Site 10, Hot Spot 2 were to “mitigate migration of contaminants from the soil (major secondary source areas) to the environment” and to “prevent exposure to contaminated soil and buried waste.” The original remedy selected in the **1999 ROD** included the following major components:

- Monitored natural attenuation of groundwater (utilizing long-term monitoring to evaluate the effectiveness of the natural attenuation process);
- Sampling of groundwater, surface water and sediment (in Slocum Creek and Turkey Gut) to confirm that site contaminants are not migrating into the environment;
- SVE at major soil hot spots (secondary source areas to groundwater); and
- Institutional controls including land and groundwater use restrictions.

The SVE system component of the remedy was designed to reduce VOC concentrations from four Site 10 soil hot spot areas to target cleanup levels (S-3 SSLs). Soil sampling was conducted to evaluate SVE effectiveness in each of the four Hot Spot Areas. The Long-Term Remedial Action Plan (LTRA) (Ref. 8) identified the soil sampling procedures to be followed at the Site 10 Hot Spot Areas.

The institutional controls prescribed in the **1999 ROD** are in place to eliminate or reduce pathways of exposure to soil contaminants and buried wastes. The institutional controls at OU2 restrict land use to industrial uses, including prohibiting use as residences, schools, playgrounds, day cares, and retirement centers. No intrusive activities (e.g., excavation of ground surface or insertion of objects into the ground surface, except for monitoring purposes) are allowed, unless prior approval has been obtained from USEPA and NCDENR. Site access is restricted to authorized personnel only with controls that include a fence around the polishing ponds, a fence around the landfill, and warning signs along the fences, Slocum Creek, and Turkey Gut to warn all unauthorized persons to stay out. Monitoring consists of

sampling of groundwater and surface water and sediment in Slocum Creek and Turkey Gut to confirm that contaminants are not migrating to groundwater or surface water.

2.2.2 Post-ROD Sampling

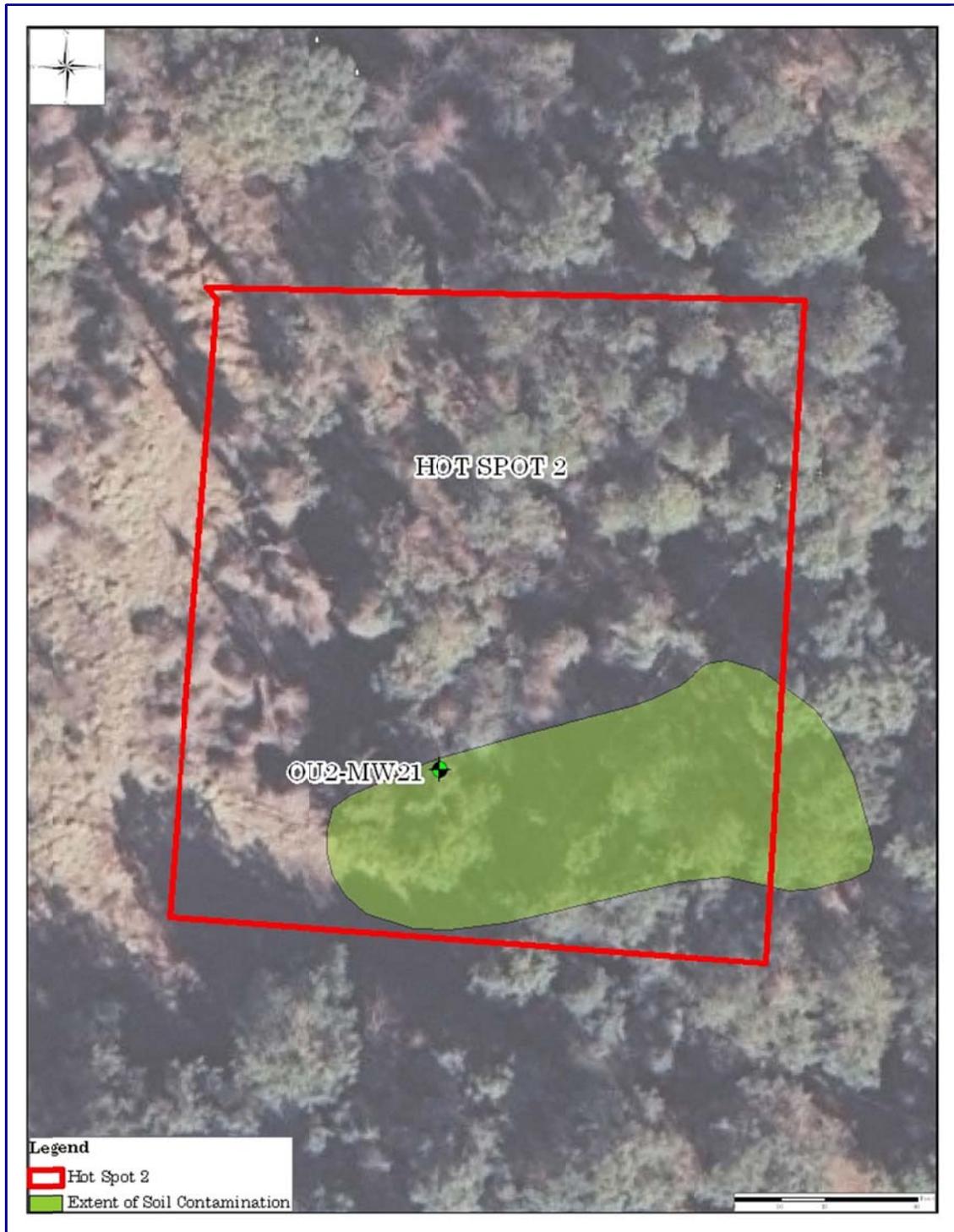
Upon implementation of the SVE system, two rounds of soil sampling were performed in 2000 and 2003 to evaluate its effectiveness. In 2000, the VOC concentrations in soil samples collected at Hot Spots 1, 2, 3, and 4 were greater than the NC SSLs, which supersede the S-3 SSLs identified in the **1999 ROD**. January 2003 soil sampling data demonstrated SVE effectiveness at Hot Spots 1, 3, and 4 where VOCs were reduced to levels below the NC SSLs. With concurrence of USEPA and NCDENR, the SVE system was shut down in 2003 following a Remedial Action Operation Optimization Report (Ref. 9) that demonstrated VOC removal was asymptotic. Additional details regarding the activities leading to the deactivation of the SVE system are included in the Final Quarterly Operation & Maintenance (O&M) Report 3rd Quarter 2003 (July 2003 through September 2003) and Annual Status Report (October 2002 through September 2003) (Ref. 10).

Based on soil sampling in 2004 and 2005, cleanup levels were achieved at Hot Spots 1, 3 and 4. The Navy, in partnership with the USEPA and NCDENR agreed to discontinue sampling at Hot Spots 1, 3, and 4, and to further delineate VOCs in soil above NC SSLs at Hot Spot 2 (Technical Memorandum Report, OU2 – Site 10, SVE System – Hot Spot Areas 1, 2, 3, and 4, January 2004 Soil Sampling [Ref. 11] and Technical Memorandum Report, OU2 – Site 10, SVE System – Hot Spot Areas 1, 2, 3, and 4, April 2005 Soil Sampling [Ref.12]).

Soil sample data from Hot Spot 2 between 2006 and 2008 indicate the VOCs benzene, vinyl chloride, chlorobenzene, 1,4-dichlorobenzene (p-dichlorobenzene), cis-1,2-dichlorobenzene, ethylbenzene, methylene chloride, naphthalene, and trichloroethene (TCE) remain above NC SSLs at depths of 3 to 5 feet (bgs). In accordance with the methods and procedures presented in the **Final Sampling Strategy for OU2, Site 10, Hot Spot No. 2** (Ref. 13) sampling was conducted until a “no NC SSLs exceedance” boundary was determined. The area of soil contamination above the NC SSLs within Hot Spot 2 is approximately 9,000 square feet (0.2 acres) (Figure 4). The results of these sampling events are detailed in the **OU2, Site 10 Focused**

Feasibility Study (FFS) (Ref. 14). With the concurrence of USEPA and NCDENR, the SVE system was decommissioned in April 2010. No SVE system components remain at the site.

FIGURE 4
Hot Spot 2 Limits of Contamination



3.0 BASIS FOR ROD AMENDMENT

The topography at Hot Spot 2 includes depressions and undulations and varies from the generally flat topography present at the other identified former soil hot spots within Site 10. The surface undulations in Hot Spot 2 suggest that the original soil cover has eroded, was not placed properly, or that there are areas of waste decomposition. The surface material at Hot Spot 2 consists of both fill (sand, silt, and clay mixed with refuse consisting of domestic trash, wood, plastic, rubber, glass, asphalt, concrete, and metal fragments) and natural materials. Although VOC concentrations in soil at Hot Spot 2 remain above NC SSLs, Hot Spot 2 is within the landfill waste disposal boundary (see Figure 2) and intermingled with landfill waste material; therefore, the application of NC SSLs as a soil performance standard and attempting to remediate waste material within a landfill waste boundary is not appropriate.

The RAOs included in the **1999 ROD** applicable to the SVE system were to “mitigate migration of contaminants from the soil (major secondary source areas) to the environment” and to “prevent exposure to contaminated soil and buried waste.” The SVE system effectively reduced VOC concentrations to below NC SSLs at Hot Spots 1, 3, and 4, but was no longer cost-effectively reducing VOC levels at Hot Spot 2. As demonstrated in Figure 2, Hotspot 2 is located within the center of the former disposal area, versus Hotspots 1, 3, and 4, which were located outside or on the outer edges of the historical disposal boundaries. Because it is inappropriate to apply a soil performance standard within the waste at Hot Spot 2 as the criteria for demonstrating compliance with the RAOs and because waste material is present at the surface in Hot Spot 2, consideration of other remedial alternatives is warranted to meet the RAOs and is the basis for this ROD Amendment.

4.0 SIGNIFICANT DIFFERENCES AND ALTERNATIVES

4.1 Description and Evaluation of Remedial Alternatives

This section discusses the original selected remedy and development of other potential remedial alternatives to address the Remedial Action Objectives described in Section 4.2. Three remedial action alternatives (RAAs) were developed to address the RAOs for soil at Hot Spot 2:

- RAA 1 – No Action;
- RAA 2 – Excavation with Off-Site Disposal; and
- RAA 3 – Soil Cover with Groundwater Monitoring.

Existing LUCs are in place restricting the land use at OU2 to industrial use with the stipulation of no intrusive activities unless prior approval has been obtained from USEPA and NCDENR. The existing LUCs will remain in place under each of the three RAAs.

Table 1 describes each RAA and the Original Remedy:

TABLE 1
REMEDIAL ALTERNATIVES

Original Remedy	Components	Details	Cost
Original Remedy – Soil Vapor Extraction; Institutional Controls	- Soil Vapor Extraction System - LUCs	The SVE systems at the secondary source areas used wells screened in the vadose zone for capture and extraction of VOCs from the soil. Air monitoring and soil sampling evaluated the effectiveness of treatment. Institutional controls were imposed to eliminate or reduce pathways of exposure to soil contaminants and buried waste at OU2. In addition, a monitoring program was implemented. The land use at OU2 was restricted to industrial uses only. No intrusive activities (e.g., excavation of ground surface or insertion of objects into the ground surface, except for monitoring purposes) is allowed, unless prior approval has been obtained from USEPA and NCDENR. Site access is restricted to authorized personnel only. Site access controls include a fence around the polishing ponds, fence around the OU2 landfill,	In 1999 ROD: Capital Cost: \$720,000 O&M Cost (30 years): \$91,400 Present - Worth Cost: \$1,500,000

4 SIGNIFICANT DIFFERENCES AND ALTERNATIVES

TABLE 1
REMEDIAL ALTERNATIVES

		and warning signs along the fences, Slocum Creek, and Turkey Gut to warn all unauthorized persons to stay out. Monitoring includes sampling of groundwater and surface water and sediment in Slocum Creek and Turkey Gut. The objective of the monitoring is to confirm that contaminants are not migrating to groundwater or surface water.	
Amended Alternatives	Components	Details	Cost
RAA1- No Action		No Action	No Cost
RAA2 - Excavation and Off Site Disposal	<ul style="list-style-type: none"> -Excavation of Soil/Waste -Off-Site Disposal -Backfill -Site Restoration 	<p>Abandonment of monitoring well OU2-MW21, located within the removal area, prior to soil/waste removal.</p> <p>Excavation of approximately 2,500 tons of soil and waste materials to the limit of 2007 and 2008 sample locations that were below the NC SSLs.</p> <p>Segregating waste from soil. Off-site disposal of segregated waste and soil to an appropriate licensed facility(ies) based on analytical results and waste classification.</p> <p>Following the excavation operation, the site would be restored by placing clean backfill to bring the site back to original grade. Disturbed areas would be revegetated with native grasses and plant species to control erosion. Access roads and other infrastructure that are disturbed or destroyed in the excavation process will be restored.</p> <p>Existing remedy components, LUCs and LTM, will be maintained consistent with the 1999 ROD.</p>	<p>Capital Cost: \$540,200</p> <p>O&M Cost (30 years): \$0</p> <p>Present - Worth Cost: \$540,200</p>

4 SIGNIFICANT DIFFERENCES AND ALTERNATIVES

Amended Alternatives	Components	Details	Cost
RAA3 – Soil Cover with Groundwater Monitoring	-Soil Cover -Site Restoration -Groundwater Monitoring	<p>Abandonment of monitoring well OU2-MW21, located within the soil cover restoration area, prior to placement of cover.</p> <p>Installation of a soil cover over areas that exceed the NC SSLs. A minimum two-foot-thick clean backfill soil cover will be placed over the area and will extend a minimum of 10 feet beyond the area of concern. The soil cover will be placed and graded to limit infiltration, erosion, and migration of soil/waste contamination to groundwater.</p> <p>The disturbed areas will be revegetated with native grasses to control erosion. Access roads or other infrastructure that are disturbed in the backfilling process will be restored.</p> <p>Groundwater monitoring will be performed to verify that contaminants are not migrating off site. This will be accomplished by comparing the results of the groundwater wells along Slocum Creek to 10-times the applicable North Carolina 2B Surface Water and Wetland Standards (NC 2B). Protective action will be taken if the groundwater results in wells adjacent to Slocum Creek exceed 10-times the applicable standard.</p> <p>Existing remedy components, LUCs and LTM, will be maintained consistent with the 1999 ROD.</p>	<p>Capital Cost: \$246,000</p> <p>O&M Cost (30 years): \$0</p> <p>Present - Worth Cost: \$246,000</p>

4.2 Remedial Action Objectives

RAOs are media-specific and/or site-specific goals established for protecting human health and the environment. At Site 10, Hot Spot 2, the environmental media to be addressed by this ROD Amendment is VOC-contaminated soil mixed with waste. The RAOs presented in the **1999 ROD** are:

- Prevent exposure to contaminated soil and buried waste;
- Restrict current and future land use at OU2;

4 SIGNIFICANT DIFFERENCES AND ALTERNATIVES

- Prevent exposure to contaminated groundwater at OU2;
- Prevent future potential use of the groundwater at OU2;
- Allow for natural attenuation of the groundwater at OU2; and
- Mitigate migration of contaminants from the soil (major secondary source areas) to the environment.

The RAOs applicable to this ROD Amendment are:

- Prevent exposure to contaminated soil and buried waste;
- Mitigate migration of contaminants from the soil (major secondary source areas) to the environment; and
- Restrict current and future land use at OU2.

The existing **1999 ROD** OU2 remedy components for LUCs will be maintained. The groundwater RAOs selected in the **1999 ROD** have not been affected by this change to the soil remedy.

4.3 Changes in Expected Outcome

This ROD Amendment will not change the expected outcome for Site 10 soil as described in the **1999 ROD**. The Site 10 landfill will remain an inactive landfill, and there is no change in either land use or RAOs as a result of this ROD Amendment. NC SSLs as performance standards for soil will not apply within the boundary of waste material. The alternatives considered in this ROD Amendment for Hot Spot 2 areas that exceed the NC SSLs will reduce migration of soil/waste contamination to groundwater and prevent exposure to contaminated soil and buried waste.

5.0 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

A comprehensive analysis of each remedial alternative with respect to the nine NCP evaluation criteria was detailed in the **FFS**. This section presents a comparative analysis of the Original Remedy and the three RAAs for soil at Site 10, Hot Spot 2. The purpose of the comparative analysis is to identify the best balance of tradeoffs for each remedial alternative.

5.1 Threshold Criteria

5.1.1 Overall Protection of Human Health and the Environment

Each alternative will protect human health and the environment for the current and future land use with the exception of RAA 1, the No Action alternative, which is presented for baseline comparison purposes.

The Original Remedy employs institutional controls, with monitoring, to reduce risks to human health from exposure to contaminated soil and buried waste material. The LTM program is used to confirm that contaminants are not migrating beyond the waste boundary to the environment. Institutional controls limit site access and prohibit residential use and invasive construction activities. This portion of the Original Remedy will be maintained.

Excavation and Off-Site Disposal (RAA 2) is protective of human health and the environment because soil/waste exceeding the NC SSLs is removed from the site. Soil Cover with Groundwater Monitoring (RAA 3) is also protective of human health and the environment by reducing infiltration to minimize migration of contaminants (in areas with soil contamination greater than the NC SSLs) from the soil and waste to the environment, by preventing direct exposure to the waste, and with existing LUCs.

5.1.2 Compliance with ARARs

There are three types of Applicable or Relevant and Appropriate Requirements (ARARs): chemical-specific, location-specific, and action-specific. RAA 1 does not comply with the ARARs, since no remedial action is taken. RAA 2 and RAA 3 will comply with chemical-specific, location-specific,

and action-specific ARARs. The key ARARs for ensuring that the remedies at the site are protective of human health and the environment are the North Carolina Surface Water Quality Standards as applied to Slocum Creek.

5.2 Primary Balancing Criteria

5.2.1 Long-Term Effectiveness and Permanence

RAA 1 will not be effective over the long-term as the contaminants will remain at the site and will not be contained, removed, treated, nor controlled. RAA 2 provides greater long-term effectiveness and permanence than RAA 3 because contaminated soil/waste up to five feet in depth will be removed from the site. RAA 3 will also be effective in the long-term because the soil cover will prevent direct exposure and minimize infiltration. LUCs will also prevent exposure, and the groundwater monitoring will detect any exceedances that are above 10-times the applicable NC 2B standard prior to the groundwater entering Slocum Creek.

5.2.2 Reduction of Toxicity, Mobility, or Volume through Treatment

None of the three proposed alternatives will reduce toxicity, mobility, or volume of contaminants through treatment. RAA 2 includes removal and disposal of VOC-contaminated soil in approved landfills. RAA 3, which includes soil cover, will reduce contact with contaminated soil/waste by human receptors and will reduce groundwater infiltration through the waste and soil. Although the Original Remedy included treatment with SVE, maximum reductions in VOC concentrations were achieved at Hot Spot 2 with levels remaining above NC SSLs. The SVE aspect of the Original Remedy was effective at Hot Spots 1, 3, and 4, but not Hot Spot 2.

5.2.3 Short-Term Effectiveness

While RAA 1 will not cause increased risk for workers and community members, it is not effective for protecting human health and the environment. For RAA 2 and RAA 3 to be effective in the short-term, worker and environmental protection plans will need to be in place. Because of the amount of excavation required for RAA 2 (and inherent unknowns due to the longevity of the landfill operations and disposition of the municipal waste material), there is greater potential for increased risk to workers and community members when removing and transporting soil/waste material.

There is also risk of disturbing contained material (e.g., drum) and releasing the contamination to the environment. Therefore, because RAA 3 will not disturb the surface and will be physically effective in protecting human health and the environment in a shorter time frame than RAA 2, RAA 3 has the greatest short-term effectiveness.

5.2.4 Implementability

RAA 1 does not require the coordination or availability of resources, services, or technologies; however, it will not meet the threshold criteria. Due to the unknown distribution of the municipal waste material within Hot Spot 2, efforts in coordinating excavation and off-site disposal (including waste characterization, Department of Transportation [DOT] requirements, disposal facility requirements, and trucking arrangements), RAA 2 will be more difficult to implement than RAA 3.

5.2.5 Cost

Of the viable alternatives (except No Action), RAA 3 is the least-cost alternative, with an estimate present-worth cost of \$246,000, associated with the installation of the soil cover. There is no additional cost for the groundwater monitoring or LUC aspect of the RAA 3. The groundwater monitoring is performed under the LTM program and comparing the results to an additional standard does not add cost to the LTM. The RAA 2 cost for removing and disposing of the waste, and restoring the site is \$540,000. There are no long-term costs associated with RAA 2.

5.3 Modifying Criteria

5.3.1 State Acceptance

NCDENR involvement has been continual throughout the CERCLA process for OU2, Site 10 and the state of North Carolina concurs with the selected remedy.

5.3.2 Community Acceptance

The **Proposed Plan** was issued for public review from April 11, 2011 to June 10, 2011 and a public meeting was held on April 27, 2011. The transcript from the public meeting is provided in Appendix A. No members of the

community attended the April 27, 2011 meeting, and no public comments on the **Proposed Plan** were received.

5.4 Selected Remedy

Based on the consideration of the requirements of CERCLA, the detailed analysis of potential alternatives using the evaluation criteria, and current and proposed exposure scenarios, the preferred remedial alternative for Hot Spot 2 is RAA 3 – Soil Cover with Groundwater Monitoring. This remedy is the preferred alternative presented in the **Proposed Plan**. This ROD Amendment does not affect Hot Spots 1, 3, or 4 where NC SSLs have been achieved. Existing LUCs and LTM at OU2, including Hot Spot 2, will be maintained.

The Navy and MCAS Cherry Point are responsible for implementing, maintaining, inspecting, reporting on, and enforcing the LUCs as defined in the **1999 ROD**. Although the Navy may later transfer procedural responsibilities related to the Selected Remedy to another party by contract, property agreement, or through other means, the Navy will retain ultimate responsibility for remedy integrity.

5.4.1 Rationale for Selected Remedy

The soil cover with groundwater monitoring alternative provides the best balance with respect to the nine CERCLA evaluation criteria. The preferred alternative is cost-effective and will meet the RAOs of preventing exposure to contaminated soil and buried waste and mitigating migration of contaminants from the soil (major secondary source areas) to the environment.

The **Human Health Risk Assessment (HHRA)** completed as part of the **RI** evaluated potential exposures associated with site soils 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 may include direct contact with contaminated soil, incidental ingestion, and dermal absorption. The **RI** concluded that risks associated with surface soil were exceeded for receptors and exposure pathways outside of the USEPA “acceptable” risk range (i.e., cancer risk of 1E-6 to 1E-4 and Hazard Index [HI] below 1.0) for future residents. The

institutional controls are in place to eliminate or reduce pathways of exposure to soil contaminants and buried wastes and will be maintained.

RAA 2 has the most significant concerns regarding implementability due to the intrusive nature of the remedy. While the excavation of this material could be performed by trained environmental contractors, removal and transportation of contaminated soil comingled with waste from an existing landfill to a secondary landfill is not routine. The unknown extent and distribution of the refuse contained in Hot Spot 2 poses additional concerns and challenges related to transport and disposal. The removal area is within a landfill (i.e., typically heterogeneous in nature); therefore, it may be difficult to obtain approval to dispose of this comingled material at an appropriately permitted facility.

5.4.2 Description of Selected Remedy

RAA 3 - Soil Cover with Groundwater Monitoring includes installation of a soil cover over areas that exceed the NC SSLs to prevent direct exposure to waste and limit infiltration and migration of contaminants to groundwater. A minimum two-foot-thick clean backfill soil cover will be placed over the area and will extend a minimum of 10 feet beyond the area of concern. The disturbed areas will be revegetated with native grasses to control erosion. Access roads or other infrastructure that are disturbed in the backfilling process would be restored and improved to allow vehicular access for future inspections. The cover will be contoured to control erosion and sedimentation and will be compacted with heavy equipment in six-inch lifts. It is assumed that the majority of backfill would be obtained from an on-base borrow source and would be mixed with topsoil as necessary to provide an acceptable growth medium. Monitoring well OU2-MW21, located within the soil cover area, would be properly abandoned prior to soil cover placement.

The RAOs for addressing soil and waste at Hot Spot 2 are to “prevent exposure to contaminated soil and buried waste” and “mitigate migration of contaminants from the soil (major secondary source areas) to the environment.” The soil cover will minimize rainwater infiltration through the soil/waste left in place and prevent exposure to contaminated soil and buried waste. Enhancing the existing LTM by comparing the results of the groundwater wells along Slocum Creek to 10-times the applicable NC 2B standard will ensure detection of off-site migration of contamination.

5 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

Immediate action will be taken if the groundwater results in wells adjacent to Slocum Creek exceed 10-times the applicable standard.

6.0 SUPPORT AGENCY COMMENTS

The Navy and USEPA jointly selected the remedy for this ROD Amendment; NCDENR involvement has been continual throughout the CERCLA process for OU2, Site 10, and the state of North Carolina concurs with the selected remedy. The State of North Carolina also did not have any comments on the Final OU2, Site 10 ROD Amendment.

7.0 STATUTORY DETERMINATIONS

The selected remedy will satisfy the statutory requirements of CERCLA Section 121 which include:

- (1) Protect human health and the environment;
- (2) Comply with ARARs;
- (3) Achieve cost-effectiveness; and
- (4) Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

The remedy does not employ treatment that reduces toxicity, mobility, or volume as a principal element because the site is and will remain a landfill and a soil cover is a well-established remedy for landfills.

The following paragraphs evaluate the amended soil remedy for OU2, Site 10, Hot Spot 2 soils with respect to these requirements.

7.1 Protection of Human Health and the Environment

The selected remedy is protective of human health and the environment by mitigating the migration of contaminants from the soil and waste to the environment by installing a clean two-foot (minimum) soil cover. Although institutional controls are in place that prevent exposure to contaminated soil and buried waste, the installation of the soil cover also provides a secondary means of preventing human contact (e.g., site worker, trespasser) with soils/waste in this area. Human health exposures are prevented with proper implementation of the selected remedy.

7.2 Compliance with ARARs

The selected remedy complies with the chemical-specific, location-specific, and action-specific ARARs presented herein. The state and federal ARARs are presented in Appendix B.

7.3 Cost Effectiveness

The selected remedy provides the most reasonable value relative to the cost.

7.4 Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

The selected remedy represents the maximum extent to which permanent solutions and alternative treatment technologies can be used in a practicable manner at OU2, Site 10, Hot Spot 2. The original SVE system remedy was no longer effectively removing VOCs from the soil. The soil cover at the site will be a permanent solution that will decrease the amount of surface water infiltration at this site.

7.5 Preference for Treatment as a Principal Element

The selected remedy does not involve the use of an active treatment process or technology; however, the soil cover minimizes water infiltration and erosion, and wind erosion that may contribute to migration and transport of VOC-contaminated soil. A treatment alternative was selected in the **1999 ROD**, but the Remedial Action Operation Optimization Report determined that the treatment alternative was no longer effective for Hot Spot 2.

7.6 Five-Year Review Requirements

Because the remedies in the **1999 ROD** resulted in hazardous substances, pollutants, or contaminants remaining on-site in groundwater above levels that allow for unlimited use/unrestricted exposure (UU/UE), a statutory review is conducted every five years to ensure that the remedies are protective of human health and the environment. Hot Spot 2 will continue to be addressed in the five year reviews since waste remains in place.

8.0 COMMUNITY PARTICIPATION

Community participation at MCAS Cherry Point includes a Restoration Advisory Board (RAB), public meetings, a public information repository, newsletters and fact sheets, public notices, and an ERP web site. The Community Involvement Plan for MCAS Cherry Point provides detailed information on community participation for the ERP.

The RAB was formed in 1995 and consists of community members and representatives of the USEPA, NCDENR, Navy, and Marine Corps. RAB meetings are held every three to six months and are open to the public to provide opportunity for public comment and input. The investigations at OU2, the findings, and potential remedial approaches have been presented and discussed at the RAB meetings.

The Community Involvement Plan, **1999 ROD**, and technical reports supporting the remedial decision are available for download by the public via the MCAS Cherry Point ERP Public web site and can be accessed at <http://go.usa.gov/2EH>, then click 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 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 internet, access to the MCAS Cherry Point ERP public web site and a hardcopy version of the ROD Amendment 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.

For additional information on the ERP, contact:

Public Affairs Office
NAVFAC Atlantic
6506 Hampton Blvd.
Norfolk, VA 23508-1278
757-322-8005

In accordance with Sections 113 and 117 of CERCLA, the Navy and MCAS Cherry Point provided a public comment period from April 11 through June 10, 2011, for the preferred alternative described in the **Proposed Plan** for OU2, Site 10, Hot Spot 2 soils. A public meeting to present the **Proposed Plan** was held at the Havelock Tourist and Event Center, located in Havelock, North Carolina, on April 27, 2011. Public notice of the meeting and availability of documents was placed in the *Sun Journal Newspaper* on April 10, 2011, the *Havelock News* on April 14, 2011; the *Windsock* on April 14, 2011; and the *Carteret County News-Times* on April 10, 2011.

No RAB members or individuals from the community attended the April 27, 2011 public meeting. No comments, concerns, or questions were received by the Navy, USEPA, or NCDENR during the public comment period. Upon finalization of the ROD Amendment, a notice of availability will be published in the *Sun Journal Newspaper*, *Havelock News*, *Windsock*, and *Carteret County News-Times*.

9.0 ACRONYMS AND REFERENCES

9.1 Acronyms and Abbreviations

2 nd FSSG	Second Force Service Support Group
ARAR	Applicable or Relevant and Appropriate Requirement
Bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System Information System
CSM	Conceptual Site Model
DoD	Department of Defense
DOT	Department of Transportation
DRMO	Defense Reutilization and Marketing Office
EAD	Environmental Affairs Division
ERP	Environmental Restoration Program
FFA	Federal Facility Agreement
FFS	Focused Feasibility Study
FMF	Fleet Marine Force
FS	Feasibility Study
LTM	Long-Term Monitoring
LTRA	Long-Term Remedial Action Plan
LUCs	Land Use Controls
MAW	Marine Aircraft Wing
MCAS	Marine Corps Air Station
NADEP	Naval Aviation Depot
NAVFAC	Naval Facilities Engineering Command
Navy	United States Department of the Navy
NC	North Carolina
NC 2B	North Carolina 2B Surface Water and Wetland Standards

9 ACRONYMS AND REFERENCES

NCDENR	North Carolina Department of Environment and Natural Resources
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
POL	Petroleum, Oil, and Lubricants
PRAP	Proposed Remedial Action Plan
RAA	Remedial Action Alternative
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
Ref.	Reference
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act of 1986
SSL	Soil Screening Level
STP	Sewage Treatment Plant
SVE	Soil Vapor Extraction
TCE	Trichloroethene
USEPA	United States Environmental Protection Agency
UU/UE	Unlimited Use/Unrestricted Exposure
VOC	Volatile Organic Compound

9 ACRONYMS AND REFERENCES

9.2 References

Reference Number	Reference Phrase in ROD Amendment	Location in ROD Amendment	Identification of Referenced Document
1	Federal Facility Agreement (FFA)	Section 1.1	Naval Facilities Engineering Command (NAVFAC). 2005. <i>Federal Facility Agreement for Marine Corps Air Station Cherry Point, North Carolina</i> . USEPA Administrative Docket Number CERCLA-04-2005-3766.
2	1999 Record of Decision (ROD)	Section 1.2	Tetra Tech NUS, 1999. <i>Record of Decision for Operable Unit 2, Marine Corps Air Station Cherry Point, North Carolina</i> . September.
3	Proposed Plan	Section 1.5	Rhēa Engineers & Consultants, 2011. <i>Proposed Plan, Operable Unit 2, Site 10, Hot Spot 2, MCAS Cherry Point, North Carolina</i> . March.
4	Remedial Investigation (RI)	Section 2.2	Brown & Root Environmental, 1996. <i>Remedial Investigation Operable Unit 2 for Marine Corps Air Station Cherry Point, North Carolina</i> . June.
5	LTM Work Plan	Section 2.2	CH2M HILL, 2002. <i>Final Long-Term Monitoring (LTM) Work Plan for Operable Unit 2 Groundwater, MCAS Cherry Point, North Carolina</i> . September.
6	Feasibility Study (FS)	Section 2.2	Brown & Root Environmental, 1997. <i>Feasibility Study for Operable Unit 2, Marine Corps Air Station Cherry Point, North Carolina</i> . July.
7	Proposed Remedial Action Plan (PRAP)	Section 2.2	Brown & Root Environmental, 1996. <i>Proposed Remedial Action Plan for Operable Unit 2, Marine Corps Air Station Cherry Point, North Carolina</i> . June.
8	Long-Term Remedial Action Plan (LTRA)	Section 2.2.1	OHM Remediation Services Group. May 1999, Rev. February 2000, April 2002. <i>Long Term Monitoring Remedial Action Plan for Operation of the Soil Vapor Extraction Remediation System at Operable Unit 02 Site 10 Soils MCAS Cherry Point, North Carolina</i> .
9	Remedial Action Operation Optimization Report	Section 2.2.2	URS Group, Inc., 2003. <i>Marine Corps Air Station, Cherry Point, North Carolina, Remedial Action Operation Optimization Report</i> . February.

9 ACRONYMS AND REFERENCES

10	Final Quarterly Operation and Maintenance (O&M) Report 3rd Quarter 2003 (July 2003 through September 2003) and Annual Status Report (October 2002 through September 2003)	Section 2.2.2	AGVIQ/CH2M HILL, 2006. <i>Final Quarterly O&M Status Report 3rd Quarter 2003 (July 2003 through September 2003) and Annual O&M Status Report (October 2002 through September 2003) Operable Unit 2, Site 10.</i> June.
11	Technical Memorandum Report, OU2 – Site 10, SVE System – Hot Spot Areas 1, 2, 3, and 4, January 2004 Soil Sampling	Section 2.2.2	Rhēa Engineers & Consultants, 2005. <i>Technical Memorandum Report, Operable Unit 2 – Site 10, SVE System – Hot Spot Areas 1, 2, 3, and 4, January 2004 Sampling.</i>
12	Technical Memorandum Report, OU2 – Site 10, SVE System – Hot Spot Areas 1, 2, 3, and 4, April 2005 Soil Sampling	Section 2.2.2	Rhēa Engineers & Consultants, 2005. <i>Technical Memorandum Report, Operable Unit 2 – Site 10, SVE System – Hot Spot Areas 1, 2, 3, and 4, April 2005 Sampling.</i>
13	Final Sampling Strategy for OU2, Site 10, Hot Spot No. 2	Section 2.2.2	Rhēa Engineers & Consultants, 2007. <i>Final Sampling Strategy for OU2, Site 10, Hot Spot No. 2.</i> July.
14	OU2, Site 10 Focused Feasibility Study (FFS)	Section 2.2.2	Rhēa Engineers & Consultants, 2011. <i>Final Focused Feasibility Study – Revision 1, Operable Unit 2, Site 10, Hot Spot 2, MCAS Cherry Point, North Carolina.</i> February.

APPENDIX A

PROPOSED PLAN PUBLIC MEETING

TRANSCRIPT

PUBLIC MEETING

PROPOSED PLAN -- REVISION TO SELECTED REMEDY
FOR OPERABLE UNIT 2 (OU2)
SITE 10, HOT SPOT 2 SOILS
MCAS CHERRY POINT, NORTH CAROLINA

APRIL 27, 2011
HAVELOCK TOURIST AND EVENT CENTER
201 TOURIST CENTER DRIVE
HAVELOCK, NORTH CAROLINA 28532

* * * * *

MEETING MODERATOR - MR. JEFFREY CHRISTOPHER
MCAS CHERRY POINT

PRESENTER - MS. ERICA DeLATTRE, P.E.
RHEA ENGINEERS & CONSULTANTS, INC.
4975 WILLIAM FLYNN HIGHWAY, SUITE 14
GIBSONIA, PENNSYLVANIA 15044

COURT REPORTER - BOBBIE G. NEWMAN

CAROLINA COURT REPORTERS, INC.
105 Oakmont Professional Plaza
Greenville, North Carolina 27858
TEL: (252) 355-4700 (800) 849-8448
FAX: (252) 355-4707

LIST OF ATTENDEES
PUBLIC MEETING
MCAS CHERRY POINT RESTORATION ADVISORY BOARD
APRIL 20, 2010

JEFFREY CHRISTOPHER, MCAS CHERRY POINT
WILLIAM POTTER, MCAS CHERRY POINT
ERICA DeLATTRE, RHEA ENGINEERS & CONSULTANTS, INC.
GENA TOWNSEND, US EPA
JASON WILLIAMS, NAVFAC
GEORGE LANE, NC DENR
KEN ROBITAILLE, RHEA ENGINEERS & CONSULTANTS, INC.

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COURT REPORTER'S NOTE: The doors to the public meeting portion of the MCAS Restoration Advisory Board (RAB) meeting opened at 6:00 p.m., in the Conference Room at the Havelock Tourist and Event Center, Havelock, North Carolina.

MR. JEFFREY CHRISTOPHER: The doors to the public meeting have now been open for 30 minutes. No members of the public attended. The meeting is adjourned at 6:30.

COURT REPORTER'S NOTE: At this time, the team members present all agreed to close the public meeting and attach a copy of the planned presentation by Erica DeLattre of RHEA Engineers & Consultants, Inc., to these minutes.

*****THE PUBLIC MEETING ADJOURNED AT 6:30 P.M.*****

APPENDIX B

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND TO BE CONSIDERED CRITERIA

TABLE B-1
 Chemical-Specific ARARs
 OU2, Site 10, Hot Spot 2
 MCAS Cherry Point, North Carolina

Action	Requirement	Prerequisite	Citation
<i>NC Surface Water Quality Standards</i>			
Protection of adjacent surface water body	The concentrations of toxic substances, either alone or in combination with other wastes, in surface waters shall not render waters injurious to aquatic life or wildlife, recreational activities, public health, or impair the waters for any designated uses.*	Nonpoint discharges into surface waters — Relevant and Appropriate	15A NCAC 02B .0208
Protection of adjacent surface water body	Shall not exceed 25 NTU turbidity level (unless due to natural background conditions). Compliance with this standard can be met when land management activities employ Best Management Practices as defined by Rule .0202 of this Section. Toxic substances: shall not exceed the numerical quality standards (maximum permissible levels) provided in subparagraphs (i) through (xi) to protect aquatic life.*	Nonpoint discharges into Class SC, salt waters — Relevant and Appropriate	15A NCAC 02B .0220(3)(l) 15A NCAC 02B .0220(3)(m)

* Groundwater monitoring will be performed to verify that contaminants are not migrating off site. This will be accomplished by comparing the results of the groundwater wells along Slocum Creek to 10-times the applicable North Carolina 2B Surface Water and Wetland Standards (NC 2B). Protective action will be taken if the groundwater results in wells adjacent to Slocum Creek exceed 10 times the applicable standard. The current groundwater contaminants of concern are:

- | | | | | |
|-------------------------------|--------------------------|-------------------------|------------------------------|-------------|
| ▪ 1,1-Dichloroethane | ▪ Acetone | ▪ Tetrachloroethene | ▪ Acetophenone | ▪ Arsenic |
| ▪ 1,1-Dichloroethene | ▪ Benzene | ▪ Trichloroethene | ▪ bis(2-Ethylhexyl)phthalate | ▪ Cadmium |
| ▪ 1,2-Dibromo-3-chloropropane | ▪ Chlorobenzene | ▪ Vinyl chloride | ▪ Hexachlorobutadiene | ▪ Chromium |
| ▪ 1,2-Dichloroethane | ▪ Chloroform | ▪ 2,4-Dimethylphenol | ▪ n-Nitrosodiphenylamine | ▪ Iron |
| ▪ 1,2-Dichloropropane | ▪ Chloromethane | ▪ 2-Chlorophenol | ▪ Phenol | ▪ Lead |
| ▪ 1,4-Dichlorobenzene | ▪ cis-1,2-Dichloroethene | ▪ 2-Methylnaphthalene | | ▪ Manganese |
| ▪ 2-Butanone | ▪ Ethylbenzene | ▪ 2-Methylphenol | | ▪ Zinc |
| ▪ 2-Hexanone | ▪ Hexachlorobutadiene | ▪ 3- and 4-Methylphenol | | |
| | ▪ Naphthalene | ▪ 4-Methylphenol | | |

TABLE B-2
 Location-Specific ARARs
 OU2, Site 10, Hot Spot 2
 MCAS Cherry Point, North Carolina

Location	Requirement	Prerequisite	Citation
<i>Floodplain Management</i>			
Presence of floodplain designated as such on a map	Shall consider alternatives to avoid, to the extent possible, adverse effects and incompatible development in the floodplain.	Federal actions that involve potential impacts to, or take place within, floodplains — TBC	Executive order 11988 Section 2 (a)(2)

TABLE B-3
 Action-Specific ARARs
 OU2, Site 10, Hot Spot 2
 MCAS Cherry Point, North Carolina

Action	Requirement	Prerequisite	Citation
<i>Monitoring Well Installation, Operation, and Abandonment</i>			
Construction of groundwater monitoring well(s)	No well shall be located, constructed, operated, or repaired in any manner that may adversely impact the quality of groundwater.	Installation of wells (including temporary) other than for water supply — Applicable	15A NCAC 02C .0108(a)
	Shall be located, designed, constructed, operated and abandoned with materials and by methods which are compatible with the chemical and physical properties of the contaminants involved, specific site conditions, and specific subsurface conditions.	Applicable	15A NCAC 02C .0108(c)
	Must comply with general requirements for construction of a well as provided in 15A NCAC 02C .0108(c).	Applicable	15A NCAC 02C .0108
	Shall be constructed in such a manner as to preclude the vertical migration of contaminants with and along borehole channel.	Applicable	15A NCAC 02C .0108(g)
Implementation of groundwater monitoring system	Shall be constructed in a manner that will not result in contamination of adjacent groundwaters of a higher quality.	Installation of monitoring system to evaluate effects of any actions taken to restore groundwater quality, as well as the efficacy of treatment — Applicable	15A NCAC 02L .0110 (b)

TABLE B-3
 Action-Specific ARARs
 OU2, Site 10, Hot Spot 2
 MCAS Cherry Point, North Carolina

Action	Requirement	Prerequisite	Citation
Maintenance of groundwater monitoring well(s)	Every well shall be maintained by the owner in a condition whereby it will conserve and protect groundwater resources, and whereby it will not be a source or channel of contamination or pollution to the water supply or any aquifer.	Installation of wells (including temporary wells) other than for water supply — Applicable	15A NCAC 02C .0112(a)
	Broken, punctured, or otherwise defective or unserviceable casing, screens, fixtures, seals, or any part of the well head shall be repaired or replaced, or the well shall be abandoned pursuant to 15A NCAC 02C .0113.	Applicable	15A NCAC 02C .0112(d)
	All materials used in the maintenance, replacement, or repair of any well shall meet the requirements for new installation.	Applicable	15A NCAC 02C .0112(c)
Abandonment of groundwater monitoring well(s)	Shall be abandoned in accordance with the requirements of 15A NCAC 02C .0113(d)(1) and (2).	Permanent abandonment of wells (including temporary wells) other than for water supply — Applicable	15A NCAC 02C .0113(d)

TABLE B-3
 Action-Specific ARARs
 OU2, Site 10, Hot Spot 2
 MCAS Cherry Point, North Carolina

Action	Requirement	Prerequisite	Citation
<i>General Management Standards — Land-disturbing Activities (i.e., excavation, clearing, grading, etc.)</i>			
Managing storm water runoff from land-disturbing activities	Shall install erosion and sedimentation control devices and practices sufficient to retain the sediment generated by the land-disturbing activity within the boundaries of the tract during construction.	Land-disturbing activity (as defined in N.C.G.S. Ch. 113A-53) of more than one acre of land — Relevant and Appropriate	N.C.G.S. Ch.113A-157(3)
	Shall plant or otherwise provide permanent ground cover sufficient to restrain erosion after completion of construction.		N.C.G.S. Ch.113A-157(3)
	Shall take all reasonable measures to protect all public and private property from damage caused by such activities.	Land-disturbing activity (as defined in N.C.G.S. Ch. 113A-52) of more than one acre of land — Relevant and Appropriate	15A NCAC 4B.0105

TABLE B-3
 Action-Specific ARARs
 OU2, Site 10, Hot Spot 2
 MCAS Cherry Point, North Carolina

Action	Requirement	Prerequisite	Citation
	<p>Erosion and sedimentation control plan must address the following basic control objectives:</p> <ol style="list-style-type: none"> (1) Identify areas subject to severe erosion, and off-site areas especially vulnerable to damage from erosion and sedimentation. (2) Limit the size of the area exposed at any one time. (3) Limit exposure to the shortest feasible time. (4) Control surface water run-off originating upgrade of exposed areas. (5) Plan and conduct land-disturbing activity so as to prevent off-site sedimentation damage. (6) Include measures to control velocity of storm water runoff to the point of discharge. <p>Erosion and sedimentation control measures, structures, and devices shall be planned, designed, and constructed to provide protection from the run-off of 10-year storm.</p> <p>Shall conduct activity so that the post-construction velocity of the 10-year storm run-off in the receiving watercourse to the discharge point does not exceed the parameters provided in this rule.</p>	<p>Land-disturbing activity (as defined in N.C.G.S. Ch. 113A-52) of more than one acre of land — Relevant and Appropriate</p>	<p>15A NCAC 4B.0106</p> <p>15A NCAC 4B.0108</p> <p>15A NCAC 4B.0109</p>