

M67001.PF.006830  
MCB CAMP LEJUENE  
5090.3b

2015 FIVE YEAR REVIEW FACT SHEET MCB CAMP LEJEUNE NC (PUBLIC DOCUMENT)  
11/01/2015  
CH2M HILL



# ENVIRONMENTAL CLEANUP AT MARINE CORPS BASE CAMP LEJEUNE

## 2015 Five-Year Review Fact Sheet

November 2015



This fact sheet summarizes the results of the 2015 Five-Year Review at Marine Corps Base Camp Lejeune (MCB Camp Lejeune). Five-Year Reviews are conducted to ensure current environmental cleanup activities are effectively protecting public health and the environment. *The 2015 Five-Year Review indicated all ongoing remedial actions at MCB Camp Lejeune are protecting human health and the environment.* The review also provided recommendations to ensure some remedies will continue to be protective in the long-term.

## FIVE-YEAR REVIEW

The Navy and MCB Camp Lejeune, working in partnership with United States Environmental Protection Agency (USEPA) and North Carolina Department of Environmental Quality (NCDEQ), have completed a Five-Year Review of ongoing environmental cleanup actions at MCB Camp Lejeune. The purpose of the Five-Year Review is to ensure that the cleanup actions are continuing to protect human health and the environment.

A site is included in the Five-Year Review if contaminants remain above levels that would allow for unlimited use and unrestricted exposure and if there is a *Record of Decision (ROD)* in place. Seventeen "operable units" or OUs, covering 26 sites, were evaluated in this Five-Year Review.

*Words shown in italics are defined in text boxes.*

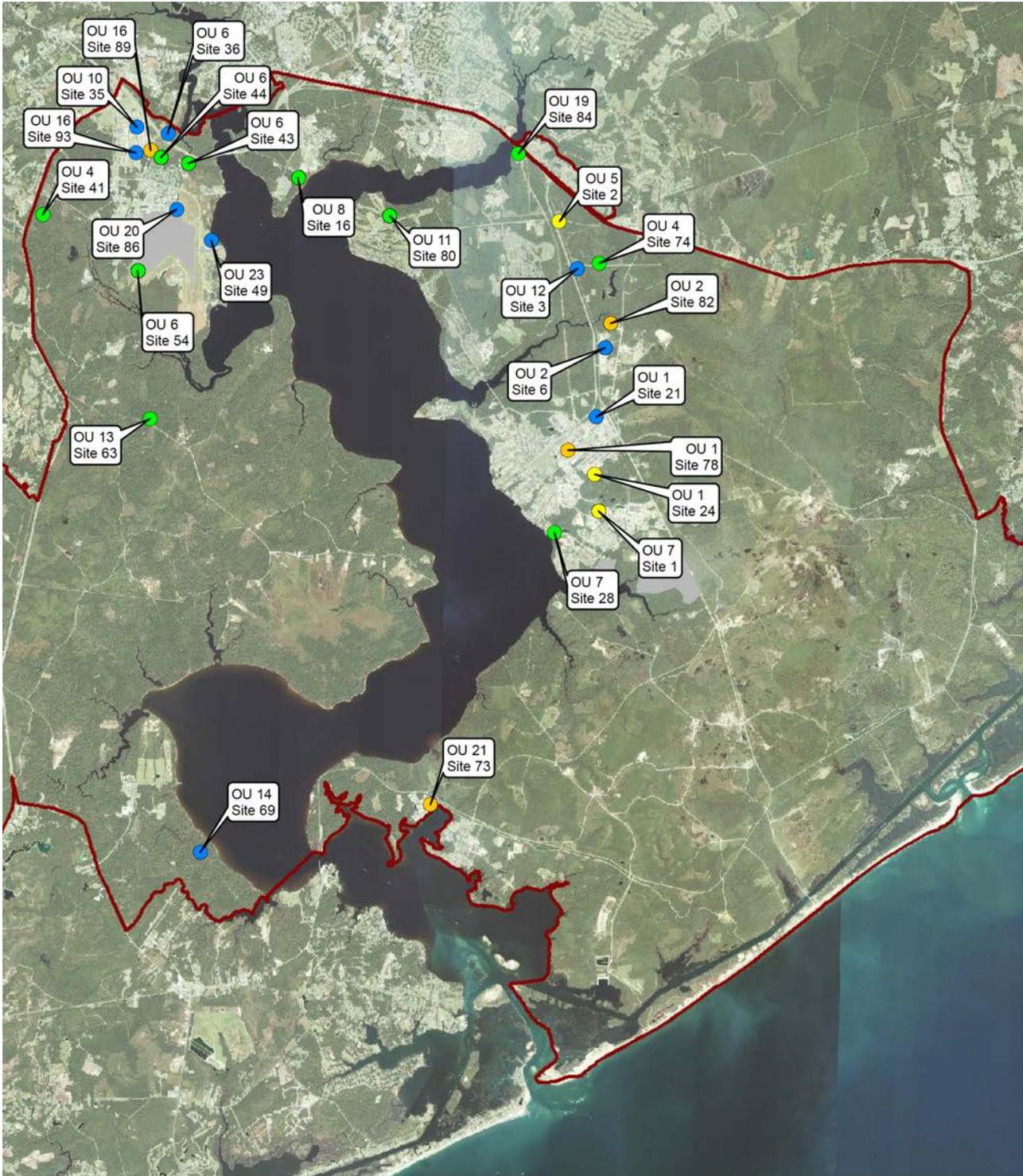
*The Record of Decision (ROD) documents the selected remedy following consideration of public comments. It reflects an evaluation of the potential human health or environmental risks posed by the site.*

## BACKGROUND

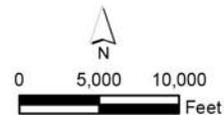
MCB Camp Lejeune is a military installation in Onslow County, North Carolina. The Base's mission is to maintain combat-ready units for deployment and humanitarian missions abroad. Historical operations, storage, and disposal practices at MCB Camp Lejeune resulted in environmental impacts to soil and groundwater. The DoD is responsible for identifying, assessing, and cleaning up these environmental impacts. The investigation and cleanup is being conducted under the Navy's Installation Restoration Program (IRP) and under provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly referred to as "Superfund."

## FIVE-YEAR REVIEW SITES

A brief overview of the 26 sites evaluated in MCB Camp Lejeune's 2015 Five-Year Review are described on the remaining pages, organized by the type of remedy that is currently in place for each site. Details are found in the Five-Year Review report, which can be accessed in the Administrative Record (see page 8).



- Legend**
- Ongoing Remediation, Long-Term Monitoring and/or Monitored Natural Attenuation, and Land Use Controls
  - Long-Term Monitoring and/or Monitored Natural Attenuation, and Land Use Controls
  - Land Use Controls
  - No Further Action
  - Installation Boundary



## Ongoing Remediation, Long-Term Monitoring and/or Monitored Natural Attenuation, and Land Use Controls

Remedies for the following sites include an ongoing treatment component, as well as *Long-term Monitoring (LTM)* and/or *Monitored Natural Attenuation (MNA)*, and *Land Use Controls (LUCs)*.

*Long-term Monitoring (LTM)* is monitoring that is conducted after a remedy has been completed to evaluate whether the remedial action continues to achieve the objectives.

*Monitored Natural Attenuation (MNA)* is a remedy that relies on natural processes to clean up or “attenuate” contamination in soil and groundwater. Natural attenuation occurs at most sites; however, the right conditions must exist underground for natural attenuation to clean sites adequately. These conditions are monitored to make sure that natural attenuation is working.

*Land Use Controls (LUCs)* are property restrictions placed on contaminated sites to protect human health and the environment. LUCs may also include institutional controls to prevent access, such as fences and signage.

**OU 21 Site 73 (Amphibious Vehicle Maintenance Facility)** is an area where motor oil and battery acid were reportedly discharged directly to the ground surface. The ROD was signed in 2009 to address volatile organic compounds (VOCs) in groundwater and petroleum in soil. The selected remedy included air sparging, substrate (below ground) injections, and MNA for groundwater; and LUCs for soil and groundwater. *Air sparging* was conducted from 2010 to 2012 and injections were conducted in 2011 and 2013. MNA and LUCs are ongoing.



OU 21 Site 73 Injection Well

*Air sparging* uses air to help remove volatile contaminants from soil and groundwater below the water table. When air is pumped underground, the chemicals evaporate faster, making them easier to remove.

### OU 1 Site 78 (Hadnot Point Industrial Area)

consists of maintenance shops, warehouses, painting shops, print shops, and auto body shops. The ROD was signed in 1994 to address pesticides and polychlorinated biphenyl (PCBs) in soil, and VOCs and metals in groundwater. The selected remedy included removal of contaminated soil, *groundwater extraction and treatment*, LTM of groundwater, and LUCs for soil and groundwater.

The soil removal was conducted in 1995.

Groundwater extraction and treatment, LTM, and LUCs are ongoing.



OU 1 Site 78 Corner of Fir Street and East Road

*Groundwater extraction and treatment* - commonly known as “pump and treat” - involves pumping contaminated groundwater to the surface where it can be treated. Cleaned water is then released away from the contaminated area, either in surface ponds or below-ground.

**OU 2 Site 82 (Piney Green VOC Area)** was used for storage, disposal, and handling of potentially hazardous waste. The ROD was signed in 1993 to address VOCs, pesticides, and PCBs in soil; and VOCs and metals in groundwater. The selected remedy included *soil vapor extraction (SVE)*, soil removal, groundwater extraction and treatment, LTM of groundwater and surface water, and LUCs. Soil removals were conducted in 1994-1995 and SVE was conducted in 1995. Groundwater extraction and treatment, LTM, and LUCs are ongoing.



OU 2 Site 82 Treatment Plant

Like air sparging, *soil vapor extraction (SVE)* is a process that removes contaminant vapors from below ground for treatment above ground. SVE extracts vapors from the soil above the water table by applying a vacuum to pull the vapors out.

**OU 16 Site 89 (Former Defense Reutilization and Marketing Office [DRMO])** is the former Base Motor Pool where solvents were used to clean parts, and the former DRMO, which served as a storage yard for scrap metal, electronics, vehicles, rubber tires, and fuel bladders. The ROD was signed in 2012 to address VOCs in groundwater and surface water and the potential for future *vapor intrusion* from groundwater. The selected remedy included air sparging to treat groundwater below the original source area, *permeable reactive barriers* to treat groundwater that has moved downgradient away from the source area, aerators to treat surface water, MNA, and LUCs. The remedial action was initiated in 2013 and the remedy is in place. MNA and LUCs are ongoing.



OU 16 Site 89 Surface Water Aerator



OU 16 Site 89 Air Sparging Conex Box

*Vapor Intrusion* is the movement of chemical vapors from contaminated soil or groundwater into nearby buildings. Mitigation methods to lessen the effects of vapor intrusion may be needed until contaminated soil or groundwater is cleaned up.

A *permeable reactive barrier* is a wall created below ground to clean up contaminated groundwater. The wall is “permeable” meaning that groundwater can flow through it. The “reactive” materials that make up the wall treat the contaminated groundwater as it flows through the wall.



OU 10 Site 35 Groundwater Monitoring Wells

## Long-Term Monitoring and/or Monitored Natural Attenuation with Land Use Controls

The following sites have remedies in place that include only LTM and/or MNA and LUCs.

**OU 12 Site 3 (Old Creosote Plant)** supplied treated lumber during construction of the Base Railroad. RODs were signed in 1997 and 2000 to address polycyclic aromatic hydrocarbons (PAHs) in soil and VOCs and PAHs in groundwater. The selected remedy included soil removal, LTM of groundwater, and LUCs for soil and groundwater. The soil removal was conducted in 2000 and LTM and LUCs are ongoing.

**OU 2 Site 6 (Lots 201 and 203)** is the area where wastes and supplies (including pesticides, transformers containing PCBs, solvents, electrolytes, munitions items and waste oils) were stored or disposed of. The ROD was signed in 1993 to address pesticides and PCBs in soil and VOCs in groundwater. The selected remedy included soil removal, LTM of groundwater, and LUCs. Soil removals were conducted from 1994 to 1995, and LTM and LUCs are ongoing.



OU 2 Site 6 Groundwater Monitoring Wells

**OU 1 Site 21 Transformer Storage Lot 140** is where waste oils and pesticides were disposed. A ROD was signed in 1994 to address pesticides and PCBs in soil and VOCs and metals in groundwater. The selected remedy included removal of contaminated soil, LTM of groundwater, and LUCs for soil and groundwater. The soil removal was conducted in 1995. LTM and LUCs are ongoing.

**OU 10 Site 35 (Former Camp Geiger Fuel Farm)** included five large above-ground storage tanks used to store fuel oil, kerosene, diesel, and gasoline. The ROD was signed in 2009 to address VOCs in groundwater. The selected remedy included air sparging, MNA, and LUCs. Air sparging was conducted from 2010 to 2013 and MNA and LUCs are ongoing.

**OU 6 Site 36 (Camp Geiger Dump Area)** was reportedly used for the disposal of municipal and industrial wastes including trash, waste oils, solvents, and hydraulic fluids. The ROD was signed in 2005 to address PAHs, pesticides, PCBs, and lead in soil and VOCs in groundwater. The selected remedy included MNA of groundwater and surface water and LUCs. MNA and LUCs are ongoing.



OU 6 Site 36 Brinson Creek

**OU 23 Site 49 (Marine Corps Air Station Suspected Minor Dump)** is an area that may have been used for the disposal of paint cans and construction debris. The ROD was signed in 2014 to address VOCs in groundwater and potential future vapor intrusion. The selected remedy included MNA of groundwater and LUCs that are ongoing.

**OU 14 Site 69 (Rifle Range Chemical Dump)** was reportedly used to dispose of chemical wastes, including PCBs and solvents, and chemical agents. The ROD was signed in 2013 to address the potential for chemical agents; buried waste; VOCs, pesticides, PCBs, and metals in groundwater; and potential future vapor intrusion. The selected remedy included installing a multi-layered cap, MNA and LTM of groundwater, and LUCs. The cap was installed in 2014 and MNA, LTM, and LUCs are ongoing.

**OU 20 Site 86 (Tank Area AS419-AS421)** served as a storage area for petroleum products. The ROD was signed in 2014 to address VOCs in groundwater and potential future vapor intrusion. The selected remedy included MNA and LUCs that are ongoing.

**OU 16 Site 93 (Building TC942)** housed an underground storage tank for waste oil. The ROD was signed in 2006 to address VOCs in groundwater. The selected remedy included *in-situ chemical oxidation* injections, MNA, and LUCs. The injections were completed in 2008, and MNA and LUCs are ongoing.

The LUCs were updated in 2014 to encompass the current extent of VOCs in groundwater and to address the potential for future vapor intrusion.

---

*In-Situ Chemical Oxidation* uses chemicals called “oxidants” to help change harmful contaminants into less toxic ones. It is described as “in situ” because it is conducted in place, without having to excavate soil or pump groundwater for above-ground treatment.

---

## Land Use Controls

Remedies for the following sites include only LUCs. LUCs are inspected quarterly to ensure they are in place and remain protective.

**OU 8 Site 16 (Former Montford Point Burn Dump)** received materials from the surrounding housing area and buildings. The material is suspected to have been burned and covered with soil and may remain in place. A ROD was signed in 1996 selecting a remedy of no action. However, an Explanation of Significant Differences document was submitted in 2012 making LUCs the selected remedy to prevent exposure to the waste remaining in place.

**OU 7 Site 28 (Hadnot Point Burn Dump)** was a burn area for industrial waste, trash, oil-based paint, and construction debris. The remains of the burned material were then covered with soil. A ROD was signed in 1996 to address metals in groundwater. The selected remedy included LTM of groundwater and LUCs. *Remedial goals* were met for groundwater and LTM was discontinued in 2002. In 2014, the LUCs were updated to prevent exposure to the waste remaining in-place.

---

*Remedial Goals* are the objectives for each selected remedy.

---

**OU 4 Site 41 (Camp Geiger Dump near Former Trailer Park)** was used for disposal of construction debris, petroleum-related compounds, solvents, batteries, ordnance, chemical training agents, and pesticides. The ROD was signed in 1995 to address the potential for chemical agents in soil and VOCs and metals in groundwater. The selected remedy included LTM of groundwater, surface water, and sediment, and LUCs for soil and groundwater. Remedial goals were met for groundwater, surface water, and sediment, and LTM was discontinued in 2005. LUCs remain in-place to prevent exposure to potential chemical agents.

**OU 6 Site 43 (Agan Street Dump)** reportedly received inert material such as construction debris and sewage treatment sludge. The ROD was signed in 2005 to address PAHs in soil. The selected remedy included LUCs that remain in-place.

**OU 6 Site 44 (Jones Street Dump)** was used for disposal of debris, cloth, lumber and paint cans. The ROD was signed in 2005 to address potential exposure to waste. The selected remedy included LUCs that remain in-place.

**OU 6 Site 54 (Crash Crew Fire Training Burn Pit)** has served as the fire-training burn pit since the 1950s. The ROD was signed in 2005 to address potential exposure to the former burn pit. The selected remedy included LUCs that remain in-place.

**OU 13 Site 63 (Verona Loop Dump)** reportedly received bivouac wastes generated during training activities; this waste may remain in place. The ROD was signed in 1997 selecting a remedy of no action. However, an Explanation of Significant Differences document was submitted in 2012 making LUCs the selected remedy to prevent exposure to waste remaining in place.

**OU 4 Site 74 (Mess Hall Grease Dump)** was used for disposal of drums containing pesticide-soaked bags, PCBs, and chemical agents. The ROD was signed in 1995 to address the potential for chemical agents in soil and metals in groundwater. The selected remedy included LTM of groundwater and LUCs for soil and groundwater. Remedial goals were met for groundwater and LTM was discontinued in 1998. LUCs remain in-place to prevent exposure to potential chemical agents.

**OU 11 Site 80 (Paradise Point Golf Course Maintenance Area)** where past maintenance procedures and types of waste disposed are unknown. A ROD was signed in 1997 selecting a remedy of no action. However, an Explanation of Significant Differences document was submitted in 2012 making LUCs the selected remedy to prevent exposure to pesticides in soil.

**OU 19 Site 84 (Former Building 45)** was a former electric substation, where PCB-containing transformers were used, stored, and reportedly buried. The ROD was signed in 2009 to address PCBs in soil. The selected remedy included a soil removal and LUCs. LUCs remain in place to prevent exposure to PCBs in soil.

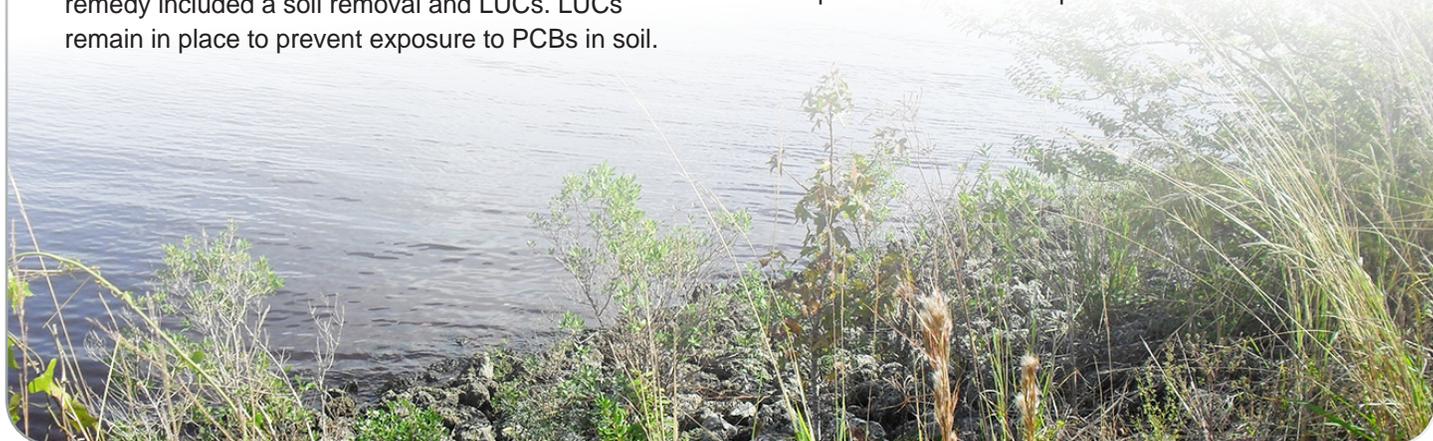
## No Further Action

The following sites have achieved “No Further Action” status since the last Five-Year Review because contamination no longer presents a threat to human health or the environment. Therefore, “No Further Action” sites will not be included in future Five-Year Reviews.

**OU 7 Site 1 (French Creek Liquids Disposal Area)** was used by mechanized, armored, and artillery units. Reportedly, liquid wastes were routinely poured onto the ground surface. A ROD was signed in 1996 to address VOCs in groundwater. The selected remedy included LTM and LUCs for groundwater. Because remedial goals were met for groundwater and LTM was discontinued in 2001, LUCs are no longer required and were removed in 2015. A Remedial Action Completion Report was prepared in 2015 to document that the remedial response has been completed.

**OU 5 Site 2 (Former Nursery/Day Care Center)** consists of Building 712, which was used for storing, handling, and dispensing pesticides. A ROD was signed in 1994 to address VOCs and metals in groundwater and pesticides in soil. The selected remedy included LTM for groundwater and LUCs for groundwater and soil. Remedial goals were met for groundwater and LTM was discontinued in 2008. The former remediation goals for soil were reviewed and meet current standards. Therefore, a Remedial Action Completion Report is recommended to document that LUCs are no longer needed and the response has been completed.

**OU 1 Site 24 (Former Industrial Area Fly Ash Dump)** was used for disposal of fly ash, cinders, solvents, used paint stripping compounds, sewage sludge, and water treatment sludge. The ROD was signed in 1994 to address pesticides and metals in groundwater. The selected remedy included LTM of groundwater. Remedial goals were met for groundwater and LTM was discontinued in 1998. A Remedial Action Completion Report is recommended to document that the response has been completed.



## CONCLUSIONS AND NEXT STEPS

The Five-Year Review indicated that all ongoing remedial actions continue to protect human health and the environment. However, for some remedies to continue to be protective in the long-term, the following recommendations are planned:

Recommendations	Sites									
	OU 1		OU 2		OU 5	OU 6		OU 10	OU 20	OU 21
	24	78	6	82	2	36	54	35	86	73
Collect groundwater samples for 1,4-dioxane because a regional screening level was established and indicator constituents are present in groundwater.		✓	✓	✓					✓	
Collect groundwater samples for perfluorinated compounds because it is an emerging contaminant group and former fire-fighter training was conducted and is indicative of its use.							✓			
Add an Industrial/Non-Industrial Use Control Boundary for vapor intrusion based on potential for a future vapor intrusion pathway.		✓	✓	✓		✓		✓		✓
Add an Intrusive Activities Control Boundary for munitions as explosive hazards may be present within the boundary of UXO-22.			✓	✓						
Re-evaluate effluent standards for the groundwater extraction and treatment system based on current State and Federal criteria.				✓						
Evaluate expanding or modifying the existing treatment system and/or evaluate alternative treatment technologies.			✓	✓						
Continue groundwater remedy evaluation to determine what changes are needed and refine the conceptual site model to evaluate the extent of groundwater contamination and exposure pathways.		✓								
Complete assessment of the extent of chemicals of concern in site media and update groundwater land use controls as applicable.			✓	✓						
Re-evaluate human health and ecological risks in Wallace Creek based on chemical of concern detections in surficial groundwater and porewater.				✓						
Compare groundwater data collected from the most downgradient locations closest to Brinson Creek to 10 times the surface water standards; instead of modeling and surface water sampling; to monitor future protectiveness of Brinson Creek.						✓				
Prepare a Remedial Action Completion Report to document remedy completion because cleanup levels were met.	✓				✓					

The next Five-Year Review for MCB Camp Lejeune will be completed in 2020.

## FOR MORE INFORMATION

If you have questions about the Environmental Restoration Program, please contact the Base Environmental Management Division:

**Charity Delaney**  
**(910) 451-9385**  
**[charity.delaney@usmc.mil](mailto:charity.delaney@usmc.mil)**

---

For general information about the MCB Camp Lejeune Environmental Restoration Program please visit:

***<http://go.usa.gov/Dy5T>***



---

The Administrative Record is a database of all documents included in environmental decision-making for MCB Camp Lejeune. Internet access to the website or the Administrative Record may be obtained at:

**Onslow County Public Library**  
**58 Doris Avenue East**  
**Jacksonville, NC 28540**  
**910-455-7350**