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FINAL SITE MANAGEMENT PLAN 2013 MCAS CHERRY POINT NC

9/1/2012

CH2M HILL

NAVFAC
Naval Facilities Engineering Command

Final

Site Management Plan
Fiscal Year 2013

Marine Corps Air Station Cherry Point
Cherry Point, North Carolina
September 2012

Contract No. N62470-11-D-8012 | CTO-0045

prepared by CH2MHILL.

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Contract Task Order 0045

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Prepared for

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Prepared by

CH2MHILL

Virginia Beach, Virginia

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Acronyms and Abbreviations

AM	action memorandum
amsl	above mean sea level
AOC	area of concern
AS	air sparge
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
CLEAN	Comprehensive Long-term Environmental Action—Navy
COC	contaminant of concern
COPC	contaminant of potential concern
COPEC	contaminant of potential ecological concern
CSM	conceptual site model
cVOC	chlorinated volatile organic compound
°F	degrees Fahrenheit
DCA	dichloroethane
DD	Decision Document
DDT	dichlorodiphenyltrichloroethane
DERP	Defense Environmental Restoration Program
DNAPL	dense non-aqueous phase liquid
DoD	Department of Defense
DPT	Direct-Push Technology
DRMO	Defense Reutilization and Marketing Office
EAD	Environmental Affairs Department
EE/CA	Engineering Evaluation/Cost Analysis
ERA	Ecological Risk Assessment
ER	Environmental Restoration
ER,N	Environmental Restoration, Navy
ESI	Expanded Site Investigation
FFA	Federal Facility Agreement
FFS	Focused Feasibility Study
FRCE	Fleet Readiness Center East
FS	Feasibility Study
ft	feet, foot
ft^2	square feet
FY	fiscal year
HHRA	Human Health Risk Assessment
HI	hazard index
HRC	Hydrogen Release Compound
IAS	Initial Assessment Study
IC	institutional control
IR	Installation Restoration
IRA	Interim Remedial Action

IRACR	Interim Remedial Action Completion Report
IRI	Interim Remedial Investigation
IROD	Interim Record of Decision
IRP	Installation Restoration Program
IWTP	Industrial Wastewater Treatment Plant
LTM	long-term monitoring
LUC	land use control
LUCAP	Land Use Control Assurance Plan
MC	munitions constituents
MCAS	Marine Corps Air Station
MCL	Maximum Contaminant Level
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
mgd	million gallons per day
MIP	Membrane Interface Probe
MMRP	Military Munitions Response Program
MNA	monitored natural attenuation
MRP	Munitions Response Program
NACIP	Navy Assessment and Control of Installation Pollutants
NADEP	Naval Aviation Depot
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NC SSL	North Carolina Soil Screening Levels
NC2L	North Carolina Groundwater Standards
NCAC	North Carolina Administrative Code
NCDENR	North Carolina Department of Environment and Natural Resources
NFA	no further action
No.	number
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
NTCRA	non-time-critical removal action
O&M	operation and maintenance
OU	Operable Unit
PA/SI	Preliminary Assessment/Site Investigation
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
POEI	point of environmental interest
POL	petroleum, oil, and lubricants
PRAP	Proposed Remedial Action Plan
PRB	permeabile reactive barrier
PRG	preliminary remediation goal
PSA	Preliminary Screening Area
RA	Remedial Action
RACR	Remedial Action Completion Report
RAO	remedial action objective
RASO	Radiological Affairs Support Office
RC	Response Complete

RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
Rhēa	Rhēa Engineers & Consultants, Inc.
RI	Remedial Investigation
RIP	remedy-in-place
ROD	Record of Decision
RRR	Relative Risk Ranking
SAP	Sampling and Analysis Plan
SAR	SWMU Assessment Report
SARA	Superfund Amendments and Reauthorization Act
SC	Site Closeout
SLERA	Screening-level Ecological Risk Assessment
SMP	Site Management Plan
SOP	standard operating procedure
SSA	Site Screening Area
SSI	Supplemental Site Investigation
SSP	site screening process
STP	sewage treatment plant
SV	sampling visit
SVE	soil vapor extraction
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TCE	trichloroethene
TCRA	time-critical removal action
TDM	Technical Direction Memorandum
TPH	total petroleum hydrocarbon
TSDF	Treatment, Storage and Disposal Facility
U.S.	United States
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
VGM	voluntary groundwater monitoring
VI	vapor intrusion
VOC	volatile organic compound
VSI	Visual Site Inspection
WCSD	Watershed Contaminated Source Document

SECTION 1

Introduction

This document presents the Site Management Plan (SMP) for Marine Corps Air Station (MCAS) Cherry Point, North Carolina, for fiscal year (FY) 2013. The SMP presents planned activities to be conducted at MCAS Cherry Point during FY 2013 and beyond and provides projections for long-term progress in accordance with the Department of Defense (DoD) Environmental Restoration (ER) Program. The ER Program consists of the Installation Restoration Program (IRP) for non-munitions-related sites and the Munitions Response Program (MRP) for sites containing military munitions.

This document has been prepared for the Naval Facilities Engineering Command (NAVFAC), Mid-Atlantic Division, Comprehensive Long-term Environmental Action—Navy (CLEAN) 8012 Contract N62470-11-D-8012, Contract Task Order 0045, by CH2M HILL. The SMP has also been prepared for submission to representatives of the MCAS Cherry Point Environmental Affairs Department (EAD), the North Carolina Department of Environment and Natural Resources (NCDENR), and the United States Environmental Protection Agency (USEPA) Region 4, and meets the requirements of the Federal Facility Agreement (FFA) signed in 2005 by NAVFAC, EAD, NCDENR, and USEPA. In the event of any actual or apparent conflict between any term(s) of this SMP and any term(s) of the FFA, the term(s) of the FFA will control.

The purpose of the SMP is to provide a management tool for the MCAS Cherry Point ER Partnering Team, which includes representatives from NAVFAC Mid-Atlantic, MCAS Cherry Point EAD, NCDENR, USEPA, CH2M HILL, and Rhēa Engineers & Consultants, Inc. (Rhēa). It is intended to be used in the planning and scheduling of environmental remedial response activities to be conducted at MCAS Cherry Point under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The SMP provides brief site descriptions and summaries of previous investigations, establishes activity schedules, and provides proposed deadlines for completion of deliverables. The SMP is a working document that will be revised yearly to maintain up-to-date documentation and a current summary of environmental actions at MCAS Cherry Point. This SMP updates and supersedes the FY 2012 SMP finalized in September 2011.

The MCAS Cherry Point ER Partnering Team prioritized activities and proposed schedules on the basis of the following factors:

- Addressing those sites with highest potential risk to human health and the environment first.
- Meeting requirements of USEPA, NCDENR, NAVFAC Mid-Atlantic, and MCAS Cherry Point EAD.

The SMP consists of 11 sections:

- **Section 1** establishes its purpose.
- **Section 2** describes MCAS Cherry Point and its environmental history.
- **Sections 3 through 8** present brief site descriptions and histories, summaries of previous investigations, and planned activities for FY 2013 for each of the IRP and MRP sites listed in the FFA or identified more recently for additional investigation under CERCLA. Each section is organized according to its corresponding phase of the CERCLA process and includes associated tables and figures. Section 8 includes other sites (Preliminary Screening Areas [PSAs] and Site Screening Areas [SSAs]) that have been identified as requiring either desktop audits (PSAs) or screening-level investigations (SSAs) for possible inclusion in the CERCLA RI/FS process.
- **Section 9** presents the historic and proposed removal and remedial actions (RAs) at MCAS Cherry Point.
- **Section 10** presents 5-year schedules for environmental investigation and remediation activities at those sites where activities are currently planned for FY 2013 through 2017.
- **Section 11** provides the references cited throughout this document.

SECTION 2

MCAS Cherry Point Description and Environmental History

2.1 Base Description

MCAS Cherry Point is a 13,164-acre military reservation north of the town of Havelock, in southeastern Craven County, North Carolina (**Figure 2-1**). Commissioned in 1942, MCAS Cherry Point currently provides support facilities and services for the Second Marine Aircraft Wing, the Fleet Readiness Center East (FRCE, formerly the Naval Aviation Depot [NADEP]), Service Support Detachment 21 of the Marine Logistics Group, the Naval Air Maintenance Training Group Detachment, and the Defense Reutilization and Marketing Office (DRMO). MCAS Cherry Point maintains facilities for training and supporting the Atlantic Fleet Marine Force aviation units and is designated as a primary aviation supply point.

The boundaries of MCAS Cherry Point are the Neuse River to the north, Hancock Creek to the east, North Carolina Highway 101 to the south, and an irregular boundary approximately ¾-mile west of Slocum Creek to the west.

2.2 Regional Physiography, Climate, and Surface Water Hydrology

MCAS Cherry Point is located in the Atlantic Coastal Plain Physiographic Province. The area encompassing MCAS Cherry Point lies in the Neuse River drainage basin, which is one of two major river basins that flow into Pamlico Sound.

The topography of this portion of the Coastal Plain Province is relatively flat. Surface elevations in the Coastal Plain range from sea level to about 50 feet (ft) above mean sea level (amsl), with an average elevation of 20 ft amsl. Coastal areas are swampy and of generally low relief, and are characterized by large tidal streams and their tributaries. The land surface across the facility slopes generally east to west toward Slocum Creek. Land-surface elevations range from 25 ft amsl near Roosevelt Boulevard to approximately 1 ft amsl at Slocum Creek. Typical elevations are generally between 20 and 25 ft amsl, with a few local topographic highs between 25 and 29 ft amsl. Elevations along the surface water drainage features that border much of MCAS Cherry Point are generally between 1 and 5 ft amsl.

Stormwater drainage across MCAS Cherry Point is directed to one of the surface water bodies by a series of storm sewers, drainage ditches, and tributaries. Some tidal influences are likely in Slocum Creek and Hancock Creek, which are classified as Class SC estuarine water by the NCDENR. These waters are suitable for fish and wildlife and for secondary recreation (i.e., not considered suitable for swimming).

Proximity to the Atlantic Ocean significantly influences the climate of MCAS Cherry Point. The climate is warm and humid with short, mild winters and long, hot summers. Winter temperatures average 46 degrees Fahrenheit (°F), and those in summer average 77°F. Precipitation is not evenly distributed, with the greatest monthly precipitation occurring during July, August, and September (6 to 8 inches per month). In the other months, monthly rainfall averages 3 to 4 inches. Recharge to the surficial (water table) aquifer system is from precipitation. Average precipitation for the Coastal Plain is approximately 50 inches per year (Giese, Eimers, and Coble, 1997). The generalized water budget for the Coastal Plain includes evapotranspiration of about 33 inches per year, recharge to the water table aquifer of about 12 inches per year, and overland runoff to streams of about 5 inches per year. Of the 12 inches per year of recharge to the water table aquifer, approximately 11 inches per year moves laterally and discharges to streams; the remaining 1 inch or less per year moves vertically downward through confining units into deeper confined aquifers (Giese, Eimers, and Coble, 1997). Tropical hurricanes pass offshore twice in an average year, but infrequently strike the coast with full force.

2.3 Geology and Hydrogeology

2.3.1 General Regional Geologic and Hydrogeologic Framework

The regional geologic and hydrogeologic framework for North Carolina presented here is based principally on information compiled and developed as part of the U.S. Geological Survey's (USGS) Regional Aquifer-System Analysis. The Coastal Plain Province of North Carolina is underlain by an eastward-thickening wedge of unconsolidated gravel, sand, silt, and clay with scattered beds of shells and loosely consolidated beds of limestone, sandy limestone, and shell limestone (Winner and Coble, 1996). The sedimentary sequence ranges in age from Quaternary to Cretaceous and reaches a thickness of 10,000 ft at the Atlantic coast. Near MCAS Cherry Point, the Coastal Plain Province sediments are estimated to be approximately 2,500 ft thick (Lloyd and Daniel, 1988). The lower sedimentary sequence is predominantly non-marine deltaic in origin and consists of discontinuous and heterogeneous sand-and-clay sequences. The upper sequences are predominantly marine in origin and include near-shore and estuarine deposits. The sedimentary deposits overlie pre-Cretaceous crystalline basement rock. Historical Coastal Plain Province sedimentation and deposition were controlled by fluctuations in sea level on a subsiding continental margin.

MCAS Cherry Point is underlain by 17 hydrostatic units: nine aquifers separated by eight confining units (Eimers, Daniel, and Coble, 1994). Of these regional hydrostratigraphic units, the youngest five aquifers are most relevant to remedial activities at MCAS Cherry Point. These aquifers and associated confining units, from the youngest to the oldest, are: the surficial Aquifer, the Yorktown Confining Unit, the Yorktown Aquifer, the Pungo River Confining Unit, the Pungo River Aquifer, the Upper Castle Hayne Confining Unit, the Upper Castle Hayne Aquifer, the Lower Castle Hayne Confining Unit, and the Lower Castle Hayne Aquifer. These uppermost units are described in the following subsections.

2.3.1.1. Surficial Aquifer

The surficial aquifer is the first-encountered groundwater beneath MCAS Cherry Point, and is the unconfined, water table aquifer. It is exposed at the ground surface and in streambeds throughout MCAS Cherry Point where the water table intersects the ground surface. The aquifer consists of unconsolidated and interfingering beds of fine sand, silt, clay, shell, and peat beds, with scattered deposits of coarser-grained material of relic beach ridges and floodplain alluvium. The average saturated thickness of the aquifer is 40 to 50 ft. The surficial aquifer is recharged from rainfall and is the source of recharge to the underlying confined aquifers as well as the source of base flow to streams. The surficial aquifer has an estimated hydraulic conductivity of 15–20 ft/day.

The surficial aquifer has been frequently subdivided for evaluation purposes into two different groundwater zones: the Upper and Lower surficial aquifers. This is, in part, due to minor differences in aquifer properties, but also in order to facilitate spatial delineation of contamination vertically. The Upper surficial aquifer is defined as the upper 10 to 15 ft of saturated thickness, and is generally monitored by wells installed across or near the water table. The Lower surficial aquifer is defined as the lower 20 to 30 ft of the aquifer and is monitored by wells installed just above the Yorktown Confining Unit. The Upper surficial aquifer generally contains more finer-grained materials than the Lower surficial aquifer. However, the Upper and Lower surficial aquifers are in direct hydraulic communication and there is no confining unit or geologic boundary between them.

2.3.1.2. Yorktown Confining Unit

The Yorktown Confining Unit underlies the surficial aquifer and serves as a hydrogeologic barrier to the underlying Yorktown Aquifer. The confining unit consists largely of clay and sandy clay that locally includes beds of fine sand or shells. These confining sediments comprise the youngest beds of the Yorktown Formation. The average thickness of the Yorktown Confining Unit is about 22 ft (Winner and Coble, 1996).

2.3.1.3. Yorktown Aquifer

The Yorktown Aquifer comprises predominantly fine sand, silty and clayey sand, and clay; shells and shell beds occur throughout and are reflective of marine and near-marine depositional environments. The fine sand is the dominant aquifer material, making up generally between 70 and 80 percent of the Yorktown Aquifer in Craven

County. The estimated average hydraulic conductivity of the aquifer is approximately 22 ft/day. The Yorktown Aquifer ranges in thickness from 20 to 35 ft (Eimers, Daniel, and Coble, 1994).

2.3.1.4. Pungo River Confining Unit

The upper clay beds of the Pungo River Formation and lowermost clays of the Yorktown Formation make up the Pungo River Confining Unit and overlie the Pungo River Aquifer. The confining unit contains less than 10 percent sand and has an average thickness of 55 ft (Winner and Coble, 1996).

2.3.1.5. Pungo River Aquifer

The permeable sediments of the upper and middle Pungo River Formation form the Pungo River Aquifer. The aquifer consists of fine- to medium-grained marine sand with considerable phosphate content. Based on fossil content, these sediments were deposited in an offshore setting, with some coarse sand beds representative of nearshore or estuarine environments. In eastern Craven County, the aquifer is about 90 percent sand. The western extent of the aquifer lies about 10 miles west of MCAS Cherry Point, and its thickness averages about 15 ft near its western limits. In the western portions of Craven County, where the Yorktown aquifer is absent, the Pungo River aquifer is directly overlain by the surficial aquifer. The average estimated hydraulic conductivity of the Pungo River aquifer is 32 ft/day (Winner and Coble, 1996). Recharge to the aquifer is by leakage through the upper confining unit from the Yorktown Aquifer, with upward discharge to major stream valleys. Near the western limits of the aquifer, the Neuse River may cut into the Pungo River Aquifer.

2.3.1.6. Castle Hayne Confining Unit

Regionally, the Castle Hayne confining unit and Aquifer are considered one hydrostratigraphic unit. In the vicinity of the MCAS Cherry Point, the USGS has subdivided this unit into Upper and Lower Castle Hayne Confining Units and Upper and Lower Castle Hayne Aquifers. For the purpose of this regional description of the hydrostratigraphic units of the North Carolina Coastal Plain, the Castle Hayne is not subdivided.

The Castle Hayne confining unit consists of clay, sandy clay, and clay with sandy streaks. The average thickness of the confining clays is 14 ft. In some areas, the confining unit contains sufficient sand to allow significant leakage between the Castle Hayne and the overlying aquifers (Winner and Coble, 1996).

2.3.1.7. Castle Hayne Aquifer

The Castle Hayne Aquifer consists of the Castle Hayne Limestone and rocks of the River Bend Formation. The aquifer is predominantly limestone and sand with minor amounts of clay. These sediments were deposited under marine conditions and include shell, dolomitic, and sandy limestones. The limestone varies from loosely consolidated to hard and recrystallized. The fine- to coarse-grained sand beds vary in carbonate content. Clay marl beds, when present, are generally less than 10 ft thick. Clay is also present as matrix material in sand and limestone beds. The aquifer typically consists of alternating beds of limestone, sandy limestone, and sand. In the lower part of the aquifer, sand is the dominant aquifer material. The average thickness of the Castle Hayne Aquifer is 178 ft (Winner and Coble, 1996).

The Castle Hayne Aquifer is the most productive aquifer in this area of the North Carolina Coastal Plain. The hydraulic conductivity of the aquifer varies significantly, with a range from 15 ft/day where the aquifer is relatively thin and sandy to 200 ft/day where the aquifer is thick and composed of permeable limestone. The average hydraulic conductivity estimated for the entire aquifer is 65 ft/day (Winner and Coble, 1996).

2.3.1.8. Paleochannel Occurrence

Paleochannels are remnants of former river or stream channels that have been filled and overlain by younger sediments. Studies conducted by the USGS found that Pleistocene age paleochannels eroded the Yorktown and Pungo River Confining Units and deposited younger-aged sediments in some areas beneath MCAS Cherry Point. As a result, the uppermost aquifers may be in direct hydraulic communication with each other at locations where a paleochannel truncates the confining units that normally separate the aquifers physically and hydraulically (USGS, 1994, 1996, and 2004).

The USGS identified a paleochannel within the southwestern portion of Operable Unit (OU) 1 at MCAS Cherry Point that truncated the Yorktown and Pungo River Confining Units. The USGS conducted continuous coring from stratigraphic test wells, borehole geophysical logging, and vertical seismic and high-resolution seismic reflection profiling to delineate the extent of the OU1 paleochannel (USGS, 1996 and 2004). Investigation activities at OU1 have provided additional evidence of the existence of a paleochannel and have refined the delineation of the paleochannel boundary in this area.

Groundwater levels outside of the paleochannel in the southwestern portion of OU1 show a marked discontinuity across the Yorktown Confining Unit, which acts as an aquitard, and show a downward vertical gradient from the surficial aquifer to the Yorktown Aquifer. Groundwater levels within the paleochannel generally show similar groundwater levels between the surficial and Yorktown Aquifers and show an upward vertical gradient from the surficial aquifer to the Yorktown Aquifer. The fine-grained units within the paleochannel are likely not as effective of an aquitard as the Yorktown Confining Unit, or are discontinuous in spatial extent.

2.3.2 Regional Water Usage

The primary source of water for municipal, residential, and agricultural use in the vicinity of MCAS Cherry Point is from the aquifers of the Coastal Plain of North Carolina. Total groundwater withdrawals from the Coastal Plain aquifers in North Carolina are estimated to be more than 250 million gallons per day (mgd) (Giese, Eimers, and Coble, 1997). As a result of the extensive use of groundwater and the potential impacts from overpumping of the aquifers, the North Carolina Division of Water Resources has established Capacity Use Area Number (No.) 1 under the Water Use Act of 1967. Capacity Use Area No. 1 encompasses portions of seven counties in the central North Carolina Coastal Plain, which includes the Cherry Point area of Craven County. The most important aquifer in the vicinity of MCAS Cherry Point in Capacity Use Area No. 1 is the Castle Hayne Aquifer, which can yield very large quantities of potable water. Within Capacity Use Area No. 1, greater than 50 percent of the groundwater use is for mining, followed by use for public supplies.

MCAS Cherry Point uses between 2.5 and 4.5 mgd derived from about 25 wells that range in depth from 195 to 330 ft (Castle Hayne Aquifer). The groundwater in the vicinity of MCAS Cherry Point is classified by the State of North Carolina as Class GA. Class GA groundwater is considered to be existing or potential sources of drinking water.

2.3.3 Soils

MCAS Cherry Point is located on the Talbot Terrace Plain, which was formed by sediments deposited in a lagoon approximately 220,000 years ago. The soils have developed into medium-textured materials that are underlain by beds of sandy sediments. Soil-forming processes have produced different soils mainly because of differences in natural drainage as influenced by relief and proximity to streams. The well-drained soils near the stream valleys have light-colored topsoils that are low in organic matter and yellowish or brownish subsoils. The poorly drained soils, which are located in the interstream areas and in depressions, have dark topsoils that are higher in organic matter and grayish subsoils. Soils on this landscape are similar in some of their physical properties. They are strongly to very strongly acidic and have good workability, high available water capacity, moderate permeability, and low natural fertility. The better-drained soils are well suited for most uses. A seasonal high water table generally occurs during months of low evapotranspiration (November to March), and ponding in topographic depressions occurs in areas of wetter soils.

Areas of MCAS Cherry Point are in the flood plains along streams dissecting the Talbot Terrace. These poorly to very poorly drained areas flood frequently. The soils are very young and are formed in stratified loamy and sandy alluvium. These flood plains merge with loamy brackish marsh areas as they near the Neuse River. A few areas of stream terrace occur along the Neuse River and the larger creeks. These are mostly sandy soils. Some of the low-lying areas are subject to flooding.

2.4 Ecology

MCAS Cherry Point is located on a peninsula between the Neuse River to the north and Core and Bogue Sounds to the south. The major portion of MCAS Cherry Point is located between Hancock and Slocum Creeks. Loblolly pine

dominates much of the forested land on the broad interstream areas at MCAS Cherry Point. These forests are managed for loblolly pine timber production. The lower slope forests contain a mesic mixed hardwood community. Important canopy components of this community include sweetgum, white oak, pignut hickory, and beech. The major understory trees found in the mixed hardwood forest are American holly and flowering dogwood. The inland floodplains of the tributary streams are dominated by the blackwater-swamp-community type. Important components of this community include swamp tupelo, bald cypress, red maple, sweetgum, and a variety of oaks. The mid-canopy of the swamp forest is dominated by ironwood.

According to the document *Threatened and Endangered Species Management Plan* (Appendix C in MCAS, 2001), there are no federally endangered species found on MCAS Cherry Point. MCAS Cherry Point supports one animal species (the bridle shiner) and two plant species (Chapman's Sedge and Springflowering Goldenrod) that are state-listed.

MCAS Cherry Point has an active fish and wildlife management program with on-staff foresters, wildlife biologists, and game wardens. The objectives of the management program are to protect all native wildlife resources available on a continuing basis and to enhance fish and wildlife resources. The game warden staff assists federal and state authorities in enforcement of the Endangered Species Act.

2.5 CERCLA Process

The objectives of the CERCLA process are to evaluate the nature and extent of contamination at a site and to identify, develop, and implement appropriate remedial actions to protect human health and the environment. The major elements of the CERCLA process are presented below in **Figure 2-2** and discussed in further detail in the subsections below. The documents prepared for the IRP and MRP are maintained in information repositories for public review. MCAS Cherry Point has developed a Community Involvement Plan (CIP) and established a RAB comprised of members of the community, local environment group members, and state and federal officials, who generally meet quarterly to maintain community involvement with environmental restoration activities.

2.5.1 Preliminary Assessment/Site Investigation or Site Inspection

The IRP and MRP begin with concerns about a site, area, or potential contaminant source. The Preliminary Assessment/Site Investigation (PA/SI) phase of the CERCLA process evaluates potential sites to determine if the site should be eliminated from further consideration (i.e., no further action [NFA]), identified for an action to address actual or imminent threats to human health or the environment, or further evaluated through the performance of a Remedial Investigation/Feasibility Study (RI/FS).

2.5.1.1. Preliminary Assessment

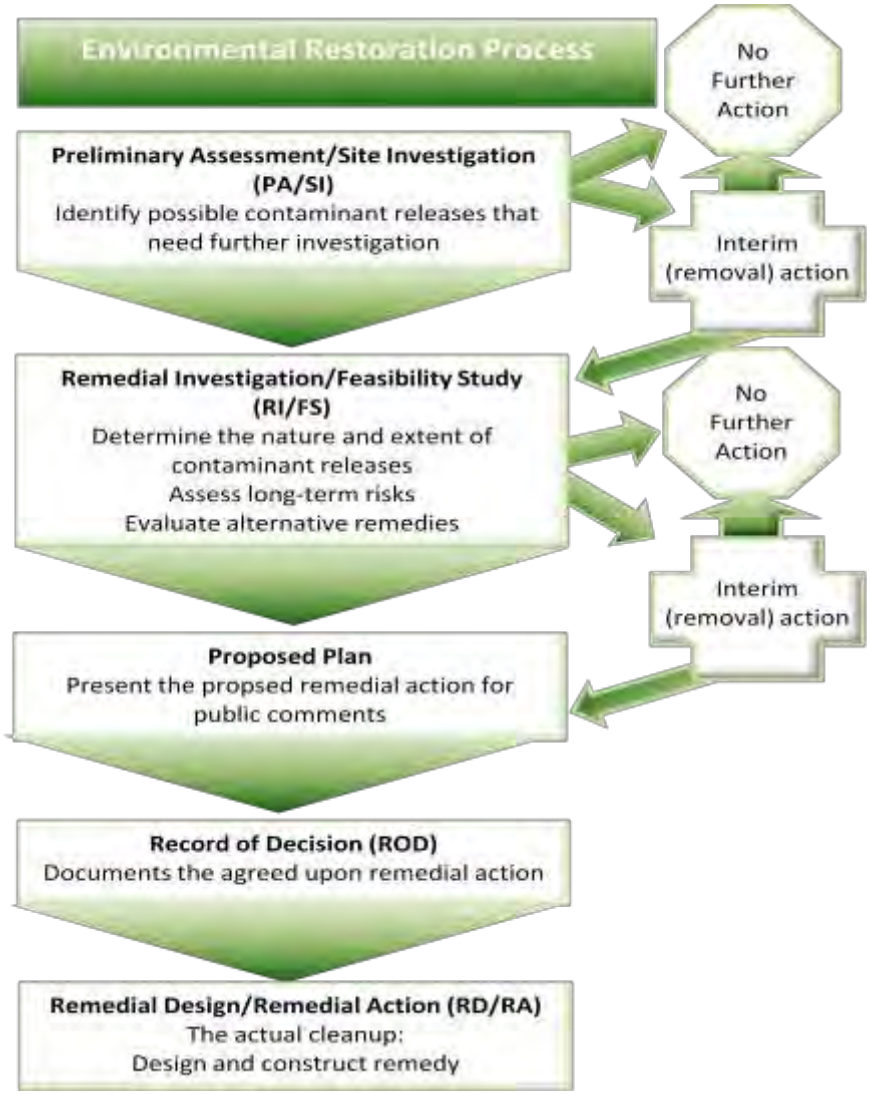
The PA is a limited-scope assessment designed to distinguish between sites that clearly pose little or no threat to human health or the environment and those that may pose a threat and require further investigation. This stage typically involves a review of historical documents and a visual site inspection. Environmental samples are rarely collected during a PA; rather, a PA is intended to be a relatively quick, low-cost compilation of existing information about a site. The PA may result in a determination of NFA; completion of an SI if there is insufficient information to reach a NFA decision; a removal action if significant threat to human health or the environment exists; or an RI/FS if remediation is deemed necessary.

2.5.1.2. Site Investigation or Site Inspection

The SI is the most common step after a PA is completed and an NFA determination cannot be made. The SI involves an onsite investigation intended to gather more information needed in determining whether there is a release or potential release, and to characterize the nature of the release and associated threats or potential threats to human health and the environment. The SI typically includes the collection of environmental samples to identify if contaminants are present at a site and a screening-level risk assessment to determine if they have been released at levels posing an unacceptable risk to human health to the environment. The sites that do not require further investigation or response are designated as NFA. If there is insufficient information to reach an NFA decision, a removal action or an RI/FS may be recommended. In some cases, if the results of the SI are

inconclusive, an Expanded SI (ESI) phase is initiated to confirm whether there is site-specific contamination or hazards prior to moving forward with an RI.

FIGURE 2-2
CERCLA Process



2.5.2 Remedial Investigation/Feasibility Study

The purpose of the RI/FS is to determine the nature and extent of contamination and, if sufficient need is documented by site sampling and a risk assessment, to evaluate proposed remedies. The RI and FS can be conducted concurrently; data collected in the RI influences the development of remedial alternatives in the FS, which in turn affect the data needs and scope of treatability studies and additional field investigations. This phased approach encourages the continual scoping of the site characterization, thereby minimizing the collection of unnecessary data and maximizing data quality.

2.5.2.1. Remedial Investigation

The RI is the investigative phase of the response action designed to characterize site conditions, determine the nature and extent of contamination, assess the risks to human health and the environment posed by site contamination, and provide a basis for decisions on further response actions or NFA. The RI provides information

to refine the conceptual site model (CSM) and forms the basis for the development of remedial action objectives (RAOs) and remedial strategies that will comprise the FS.

2.5.2.2. Feasibility Study

The FS is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions. The overall objectives of an FS are to develop and evaluate potential remedies that permanently and significantly reduce the threat to public health, welfare, and the environment and aid in selection of a cost-effective remedial action alternative that mitigates the threat(s).

2.5.2.3. Removal Action

A removal action is a response implemented in an expedited manner to address releases or threatened releases in order to mitigate the spread of contamination. Removal actions may be implemented at any time during the CERCLA process. Removal actions include Time-critical Removal Actions (TCRAs) and Non-time-critical Removal Actions (NTCRAs).

Actions taken immediately to mitigate an imminent threat to human health or the environment, such as the removal of corroded or leaking drums, are classified as TCRAs. The planning period for a TCRA is 6 months or less before field work is initiated. An Engineering Evaluation/Cost Analysis (EE/CA) is not required for a TCRA, although an Action Memorandum (AM) and Work Plan must be completed.

Removal actions that may be delayed for 6 months or more without significant additional harm to human health or the environment are classified as NTCRAs. For a NTCRA, an EE/CA is prepared rather than the more extensive FS. An EE/CA focuses only on the substances to be removed rather than on all contaminated substances at the site. A removal action can become the final remedial action if the risk assessment results indicate that NFA is required to protect human health and the environment.

A removal action can be either the final remedy or an interim action followed by a remedial action as the final remedy, based on the extent to which the threats are mitigated by the action. A removal action, when implemented as the final remedy, can be used for fast and significant reductions in risk and to mitigate long-term threats. In cases where the removal action is the final remedy, the removal action may lead to either Response Complete (RC) or Site Closeout (SC). If the RA was accomplished during the RI/FS phase, any final determination of RC and/or SC must be documented in the Record of Decision (ROD). If the NCP nine criteria were not addressed as part of the EE/CA or AM, a focused FS would be needed, followed by a ROD.

2.5.2.4. Treatability Study

Treatability studies involve testing and evaluation of a treatment technology to determine the effectiveness of that technology at a particular site or to establish site-specific design parameters. The primary objectives of treatability testing are to provide sufficient data to allow treatment alternatives to be fully developed and evaluated during the FS and to support the remedial design of a selected alternative. Treatability studies may be conducted at any time during the CERCLA process.

The need for a treatability study generally is identified during the FS. Treatability studies may be classified as either bench-scale (laboratory study) or pilot-scale (field studies). For technologies that are well-developed and tested, bench-scale studies are often sufficient to evaluate performance. For innovative technologies, pilot tests may be required to obtain the desired information. Pilot tests simulate the physical and chemical parameters of the full-scale process and are designed to bridge the gap between bench-scale and full-scale operations.

Treatability studies may also be needed during the Remedial Design (RD)/RA phase to obtain more detailed information about the unit operations, performance, and cost for designing a full-scale treatment system. Generally, a pilot-scale system is deployed onsite to collect the required information.

2.5.3 Proposed Remedial Action Plan and Record of Decision

The remedy selection process involves identifying a preferred response action strategy from those alternatives evaluated in the FS. The preferred alternative is based first on each alternative's ability to satisfy the threshold criteria, and then on trade-offs among alternatives considering the primary balancing criteria. Further, results of

the risk assessment need to be factored into the selection of the remedy. The remedy selection process includes a Proposed Plan, sometimes referred to as a Proposed Remedial Action Plan (PRAP), and ROD.

2.5.3.1. Proposed Plan or PRAP

A Proposed Plan or PRAP presents the remedial alternatives developed in the FS and recommends a preferred remedial method. The public has an opportunity to comment on the Proposed Plan or PRAP during an announced formal public comment period. Site information is compiled in an administrative record for public review. A public meeting is also held to provide supporting information.

2.5.3.2. Record of Decision

At the end of the Proposed Plan or PRAP public comment period, an appropriate remedial alternative is chosen to protect human health and the environment. The ROD document is then issued, describing the remedy selection process and the remedy selected. All parties directly involved in the ER Program (Navy, MCAS Cherry Point, USEPA, NCDENR, and the public) must agree on the selected alternative. Any public comments received are addressed as part of the responsiveness summary in the ROD. A public notice is issued after the ROD is signed and available for public inspection. A public notice is also published for any significant post-ROD changes. Once the ROD has been signed, the RD/RA process is initiated.

2.5.3.3. Interim Record of Decision

In some cases during earlier points in the CERCLA process, typically the RI/FS stage, it may be determined that an interim remedial action is warranted. Possible reasons for implementing an interim remedial action might include: (1) Taking quick action in the short term from an imminent threat to the environment when developing a final remedy would require additional data collection and a longer time frame to complete, or (2) Taking temporary measures to stabilize a site and prevent further migration of contaminants. Such interim actions are documented in an Interim Record of Decision, or IROD. The interim remedial action in an IROD may or may not become a component of the remedy in the final ROD, but in all cases a final ROD must be prepared for the site.

2.5.4 Remedial Design and Remedial Action

Following signature of the ROD, the RD and RA phases are implemented. The technical specifications for cleanup remedies and technologies are designed in the RD phase. The RA is the actual construction or implementation phase of the cleanup process.

2.5.4.1. Remedial Design

The purpose of the RD phase is to convert the conceptual design for the selected remedy from the FS into a full-scale, detailed design for implementation. RD includes preparation of technical RD Work Plans, drawings, specifications, and RA Work Plans.

2.5.4.2. Remedial Action

Upon completion of the RD, implementation of the RA (the remedy selected in the ROD) begins. The RA start-date is defined as the date the contractor has mobilized and begun substantial and continuous physical onsite remedial action. The start date is important because it triggers the beginning of the Five-Year Review cycle if one is required. The RA phase involves two main components, remedial action construction and remedial action operation.

Interim RAs (IRAs) are implemented to provide temporary mitigation of human health risks or to mitigate the spread of contamination in the environment. Similar to removal actions, RAs may be implemented at any time during the process. Examples of IRAs include installing a pump-and-treat system for groundwater or installing a fence to prevent direct contact with hazardous materials. For IRAs, a focused FS is prepared rather than the more-extensive FS. As with the removal action, an interim action may become the final RA if the results of the risk assessment indicate that NFA is required to protect human health and the environment.

2.5.5 Remedy-in-Place and Response Complete

2.5.5.1. Remedy-in-Place

For long-term remedies where it is anticipated that RAOs will be achieved over a long period, the Remedy-in-Place (RIP) milestone signifies the completion of the RA construction phase and that the remedy has been implemented and has been demonstrated to be functioning as designed (i.e., all testing has been accomplished and the remedy will function properly). Once RIP is completed for a site, an Interim Remedial Action Completion Report (IRACR) is prepared to document that the remedy is constructed and operating successfully.

2.5.5.2. Response Complete

At any point during the CERCLA process, a decision can be made that no further response action is required; properly documented (necessary regulatory notification or application for concurrence has occurred), these decisions constitute RC and/or SC. RC is the point at which the remedy has achieved the required reduction in risk to human health and the environment (cleanup goals/RAOs have been met). Once RC is completed for a site under a ROD, a Remedial Action Completion Report (RACR) is prepared to demonstrate that the remedy is complete and the RAOs are met. RC is followed by individual site closeout.

Once all RIPs and RCs have been documented for every site at the facility and the terms of the FFA have been met, site closeout and NPL deletion is requested.

2.5.5.3. Five-Year Reviews

Five-year reviews are generally required by CERCLA or program policy when hazardous substances remain on a site above levels that permit unlimited use and unrestricted exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy and whether it still protects human health and the environment. Generally, reviews are performed 5 years after the initiation of a CERCLA response action and are repeated every 5 years as long as future uses remain restricted. USEPA or the lead agency for a site can perform these reviews, but USEPA is responsible for assessing the protectiveness of the remedy.

2.6 Environmental History

2.6.1 Installation Restoration Program History

MCAS Cherry Point has been actively involved with environmental investigations and remediation programs since 1983, beginning with the Navy Assessment and Control of Installation Pollutants (NACIP) Program. The NACIP Program was modeled after the USEPA Superfund Program, authorized by CERCLA in 1980. An Initial Assessment Study (IAS) was the first investigation of potentially hazardous sites conducted under NACIP in 1983. The purpose of the IAS was to collect and evaluate evidence of pollutants that may have contaminated a site or that pose an imminent human health hazard. Fourteen of the 32 sites identified in the IAS (Sites 1, 2, 4, 5, 6, 7, 10, 13, 15, 16, 17, 18, 19, and 21) were determined to require further investigation (Water & Air Research, 1983).

The Navy's IRP was initiated in 1986, following enactment of the Superfund Amendments and Reauthorization Act (SARA) legislation, and replaced the NACIP.

In 1988, A. T. Kearney, Inc. conducted a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) at MCAS Cherry Point, the first step under the RCRA corrective action process. The RFA included a preliminary review of all available relevant documents, a Visual Site Inspection (VSI), and a Sampling Visit (SV), if appropriate, at the 114 solid waste management units (SWMUs) and two areas of concern (AOCs) identified. The SWMUs were divided into five groups based on their operation purpose: Flight Line, Naval Air Rework Facility, Maintenance and Support, Centralized Storage and Treatment, and Initial Assessment Study Unit. The designations for the SWMUs associated with each group are preceded with F, N, S, C, and I as appropriate. Based on the observations made during the VSI, a RCRA Facility Investigation (RFI) and a more-comprehensive inspection of production and the waste management/handling area were recommended (A. T. Kearney, 1988).

In 1989, the Navy entered into a RCRA Administrative Order of Consent with the USEPA to perform RFIs at 35 of the 114 SWMUs identified in the RFA. On December 16, 1994, MCAS Cherry Point was scored and ranked by USEPA for inclusion on the CERCLA National Priorities List (NPL). Under CERCLA, the Navy acts as the lead agency,

in partnership with USEPA and NCDENR, to address environmental investigations at the facility through the IRP. Because of the NPL and Consent Order, ongoing IRP investigations are being conducted to meet the requirements of both RCRA and CERCLA. Since the Consent Order was signed, additional sites have been identified. The Air Station's RCRA Part B Permit identifies 116 SWMUs and two AOCs. The Part B Permit was finalized and converted from an Interim Part B permit application under 40 CFR Part 265 to a final Treatment, Storage and Disposal Facility (TSDF) Part B permit Per 40 CFR Part 264 in December of 2004, expiring in December of 2014.

On May 12, 2005, the Navy, USEPA, and NCDENR executed an FFA. The FFA effectively terminated the RCRA Administrative Order of Consent. Under the FFA, all past and future work at IRP sites, SWMUs, and AOCs will be reviewed and a course of action for future work requirements at each site will be developed. The FFA includes specific requirements for the preparation and contents of the SMP. The SMP is updated annually, and includes the sites currently under investigation following the CERCLA process and the proposed deadlines for completion of deliverables, as specified in the FFA.

As part of the requirements established under CERCLA, an administrative record file has been established for the IRP at MCAS Cherry Point. The administrative record is a compilation of all documents that the DoD uses to select a RA or removal action for a site. Regardless of the nature of the site, an administrative record must be maintained. The administrative record will also serve as the basis for any future legal review of decisions made by the DoD concerning RA taken at a site. Access to the MCAS Cherry Point administrative record file is available via a NAVFAC web site: http://go.usa.gov/2EH. For those without personal access to the internet, a computer terminal that is prioritized for internet access to the MCAS Cherry Point Administrative Record is available at the public library in Havelock, North Carolina.

Five-Year Reviews were completed for MCAS Cherry Point in 2002 (CH2M HILL, 2002c) and 2007 (CH2M HILL, 2008d). In 2007, RAs or Interim RAs at seven OUs and associated sites were identified at MCAS Cherry Point for review: OUs 1, 2, 3, 4, 5, 6, and 13. All ongoing RAs were determined to be protective of human health and the environment (see Section 9.11). The next Five-Year Review is scheduled for 2012 and was underway at the time of this SMP update.

An update to the MCAS Cherry Point CIP, which provides information on community participation, was underway in FY 2012 at the time of this SMP update. A draft of the revised CIP was submitted for regulatory agency review in June 2012. The CIP will be updated again in approximately 5 years or when a major change occurs in the ERP.

2.6.2 Munitions Response Program History

DoD established the Military Munitions Response Program (MMRP), which was shortened to the MRP by the Navy, under the Defense Environmental Restoration Program (DERP) in September 2001. The purpose is to address munitions and explosives of concern, or munitions and explosives of concern (MEC) (i.e., unexploded ordnance [UXO] and waste military munitions) and munitions constituents (MC) (i.e., chemical residues of munitions) at locations that are not operational ranges. A requirement was established obligating identification, characterization, and the tracking of data on military munitions and military munitions responses at these locations. By September 2002, all locations other than operational ranges requiring a military munitions response were inventoried. DoD set a goal for remedy-in-place or response complete at all MMRP sites by the end of FY 2020.

DoD and the Navy are establishing policy and guidance for munitions and response actions under the MRP; however, the key program drivers developed to date conclude that munitions response action will be conducted under the process outlined in the NCP, as authorized by CERCLA. Therefore, the Navy and Marine Corps will work with the MCAS Cherry Point Partnering Team to follow the CERCLA process to address MRP sites identified at the Air Station.

2.6.3 Current Site Status

The status of each site identified in the FFA as potentially requiring further investigation is summarized in **Table 2-1**. This table also includes a number of additional sites that were identified historically but were subsequently determined to require no further action (NFA) under CERCLA. The FFA sites were grouped into OUs

on the basis of proximity, common waste types, and common activities. All but one of the FFA sites are part of the IRP; the single site associated with the MRP is Former Skeet and Trap Range #1.

The locations of the FFA sites at MCAS Cherry Point are shown in **Figure 2-3**. **Table 2-2** lists each of the studies conducted to date at the sites identified in the FFA as requiring additional investigation. **Table 2-3** lists the document submittals per Operable Unit.

Underground storage tank (UST) sites are addressed under the MCAS Cherry Point UST Program and are not included in this SMP. In accordance with the FFA, if residual groundwater and soil contamination is detected at a UST site that is not related to the UST, the groundwater and soil will be addressed as part of a nearby existing FFA site or as a new site.

Descriptions of each IRP and MRP site are provided in Sections 3 through 8 by phase in the CERCLA process (Section 3: PA/SI, Section 4: RI/FS, Section 5: PRAP/ROD, Section 6: RD/RA, Section 7: RIP/RC, and Section 8: other sites (PSAs and SSAs) that have been identified as requiring either desktop audits [PSAs] or screening-level investigations [SSAs] for possible inclusion in the CERCLA RI/FS process). Section 9 presents the historic and proposed RAs at MCAS Cherry Point. Section 10 presents 5-year schedules for environmental investigation and remediation activities at those sites where activities are currently planned for FY 2013 through 2017.

TABLE 2-1
Current Status of FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU	Current Site/SWMU	Description	Other Identifications	Current Status	FY 2013 Activities		FY 2014 Activities		FY 2015 Activities	
CERCLA RI/FS SITES										
OU 1	Site 16	Landfill at Sandy Branch	SWMU I-16	PP/ROD	Final PP	February 2013				
					Draft ROD	March 2013				
					Final ROD	August 2013				
OU 1	Site 42	Industrial Wastewater Treatment Plant	SWMU C-4	PP/ROD (Sites 42, 47, 51, 52, 92 and 98 to be addressed together as the OU1 Central Groundwater Plume in PP and ROD documents).	Final PP	August 2013	Draft ROD	October 2013	Final LTM/LUC Remedial Design	October 2014
							Final ROD	March 2014	Final Remedial Design	November 2014
							Draft LTM/LUC Remedial Design	May 2014		
							Draft Remedial Design	July 2014		
OU 1	Site 47	Industrial Area Sewer System		PP/ROD (Sites 42, 47, 51, 52, 92 and 98 to be addressed together as the OU1 Central Groundwater Plume in PP and ROD documents).	Final PP	August 2013	Draft ROD	October 2013	Final LTM/LUC Remedial Design	October 2014
							Final ROD	March 2014	Final Remedial Design	November 2014
							Draft LTM/LUC Remedial Design	May 2014		
							Draft Remedial Design	July 2014		
OU 1	Site 51	Building 137 Plating Shop		PP/ROD (Sites 42, 47, 51, 52, 92 and 98 to be addressed together as the OU1 Central Groundwater Plume in PP and ROD documents).	Final PP	August 2013	Draft ROD	October 2013	Final LTM/LUC Remedial Design	October 2014
							Final ROD	March 2014	Final Remedial Design	November 2014
							Draft LTM/LUC Remedial Design	May 2014		
							Draft Remedial Design	July 2014		
OU 1	Site 52	Building 133 Plating Shop and Ditch		PP/ROD (Sites 42, 47, 51, 52, 92 and 98 to be addressed together as the OU1 Central Groundwater Plume in PP and ROD documents).	Final PP	August 2013	Draft ROD	October 2013	Final LTM/LUC Remedial Design	October 2014
							Final ROD	March 2014	Final Remedial Design	November 2014
							Draft LTM/LUC Remedial Design	May 2014		
							Draft Remedial Design	July 2014		
OU 1	Site 83	Building 96 Former Pesticide Mixing Area		PP/ROD	Final ROD	December 2012				
OU 1	Site 92	VOCs in Groundwater near the Stripper Barn		PP/ROD (Sites 42, 47, 51, 52, 92 and 98 to be addressed together as the OU1 Central Groundwater Plume in PP and ROD documents).	Final PP	August 2013	Draft ROD	October 2013	Final LTM/LUC Remedial Design	October 2014
							Final ROD	March 2014	Final Remedial Design	November 2014
							Draft LTM/LUC Remedial Design	May 2014		
							Draft Remedial Design	July 2014		
OU 1	Site 98	VOCs in Groundwater near Building 4032		PP/ROD (Sites 42, 47, 51, 52, 92 and 98 to be addressed together as the OU1 Central Groundwater Plume in PP and ROD documents).	Final PP	August 2013	Draft ROD	October 2013	Final LTM/LUC Remedial Design	October 2014
							Final ROD	March 2014	Final Remedial Design	November 2014
							Draft LTM/LUC Remedial Design	May 2014		
							Draft Remedial Design	July 2014		
OU2	Site 10	Old Sanitary Landfill	SWMUs I-10a, I-10b	RIP (LTM and LUCs)	Draft Annual LTM Report	May 2013	Draft Annual LTM Report	May 2014	Draft Annual LTM Report	May 2015
					Final Annual LTM Report	August 2013	Final Annual LTM Report	August 2014	Final Annual LTM Report	August 2015
OU2	Site 76	Vehicle Maintenance Area (Hobby Shop)	Hobby Shop	RIP (LTM and LUCs)	Draft Annual LTM Report	May 2013	Draft Annual LTM Report	May 2014	Draft Annual LTM Report	May 2015
					Final Annual LTM Report	August 2013	Final Annual LTM Report	August 2014	Final Annual LTM Report	August 2015
OU3	Site 6	Fly Ash Ponds	SWMU I-6	RIP (LUCs)						
OU3	Site 7	Old Incinerator and Adjacent Area	SWMU I-7	RIP (LUCs)						

TABLE 2-1
Current Status of FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU	Current Site/SWMU	Description	Other Identifications	Current Status	FY 2013 Activities		FY 2014 Activities		FY 2015 Activities	
OU4	Site 4	Borrow Pit/Landfill (North of Runway 14)	SWMU I-4	RIP (LTM and LUCs)	Draft Annual LTM Report	May 2013	Draft Annual LTM Report	May 2014	Draft Annual LTM Report	May 2015
					Final Annual LTM Report	August 2013	Final Annual LTM Report	August 2014	Final Annual LTM Report	August 2015
OU13	Site 19	Borrow Pit/Landfill (South of Runway 32)		RIP (LTM and LUCs)	Draft Annual LTM Report	May 2013	Draft Annual LTM Report	May 2014	Draft Annual LTM Report	May 2015
					Final Annual LTM Report	August 2013	Final Annual LTM Report	August 2014	Final Annual LTM Report	August 2015
OU13	Site 21	Borrow Pit/Landfill (South of Runway 32)	SWMU I-21	RIP (LTM and LUCs)	Draft Annual LTM Report	May 2013	Draft Annual LTM Report	May 2014	Draft Annual LTM Report	May 2015
					Final Annual LTM Report	August 2013	Final Annual LTM Report	August 2014	Final Annual LTM Report	August 2015
OU13	Site 44B	Former Sludge Application Area	SWMU C-10	RIP (LTM and LUCs)	Draft Annual LTM Report	May 2013	Draft Annual LTM Report	May 2014	Draft Annual LTM Report	May 2015
					Final Annual LTM Report	August 2013	Final Annual LTM Report	August 2014	Final Annual LTM Report	August 2015
OU14	Site 90	Building 130 VOC-Contaminated Groundwater		RIP (LTM and LUCs)	Draft Annual LTM Report	December 2012	Draft Annual LTM Report	December 2013	Draft Annual LTM Report	December 2014
					Final Annual LTM Report	March 2013	Final Annual LTM Report	March 2014	Final Annual LTM Report	March 2015
MUNITIONS RESPONSE PROGRAM (MRP) SITES										
Former Skeet and Trap Range #1				PA/SI	Final Expanded SI Report	March 2013				
SITES REQUIRING NO FURTHER ACTION UNDER CERCLA										
OU 1	Site 14	Motor Transportation	SWMU I-14	NFA (Sites 14, 15, 17, 18, and 40 were addressed together in a single PRAP document and a NFA ROD)						
OU 1	Site 15	Ditch and Area Behind NADEP	SWMU I-15	NFA (Sites 14, 15, 17, 18, and 40 were addressed together in a single PRAP document and a NFA ROD)						
OU1	Site 17	DRMO Drainage Ditch	SWMU 17; SWMU I-17	NFA (Sites 14, 15, 17, 18, and 40 were addressed together in a single PRAP document and a NFA ROD)						
OU 1	Site 18	Facilities Maintenance Compound	SWMU I-18	NFA (Sites 14, 15, 17, 18, and 40 were addressed together in a single PRAP document and a NFA ROD)						
OU 1	Site 40	NADEP Former Drum Storage Area	Site 40; SWMU N-22	NFA (Sites 14, 15, 17, 18, and 40 were addressed together in a single PRAP document and a NFA ROD)						
OU2	Site 46	Polishing Ponds No. 1 and No. 2	SWMU C-12	NFA; In December 2006, the Cherry Point Partnering Team agreed there was no CERCLA contamination related to Site 46 and that the site should be excluded from the LUC boundary for OU2.						
OU5	Site 1	Borrow Pit/Landfill	SWMU I-1	NFA						

TABLE 2-1
Current Status of FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU	Current Site/SWMU	Description	Other Identifications	Current Status	FY 2013 Activities		FY 2014 Activities		FY 2015 Activities	
	Site 2	Borrow Pit/Landfill	SWMU I-2	NFA; Site Closure in 2012						
OU6	Site 12	Crash Crew Training Area	SWMUs I-12, F-13, F-14	NFA; Site Closure in 2008						
OU6	POEI 35a (SSA 35a)	High Power Engine Run-Up Area and Test Cells		NFA						
OU15	Site 82	Slocum Creek in the Vicinity of OU2 and OU3		NFA						
	Site 44A	Former Sludge Application Area	SWMU I-10c, formerly of OU2	NFA						
	Site 55	Third LAAM Tank	formerly of OU7	NFA; formally transferred in July 2003 to the Petroleum Cleanup Program (not a UST site). The State assigned NFA status to the petroleum site based upon petroleum cleanup standards.						
	Site 85	Hobby Shop Disposal Area		NFA						
	POEI 1	Magnesium and Alodine Treatment	Building 133	NFA						
	POEI 3	Cleaning Vats	Building 137	NFA						
	POEI 5	Lead Foundry	Building 137	NFA						
	POEI 6	Sump	Building 245	NFA						
	POEI 11	Condensate Catch Bucket	Building 4173	NFA						
	POEI 16	Hazardous Waste Accumulation Area	Building 4525	NFA						
	POEI 17	Ditch Next to Coal Storage Yard		NFA						
	POEI 22 (PSA 22)	Radioactive Waste Storage Area #1	Between buildings 133 & 421	NFA						
	POEI 23 (PSA 23)	Radioactive Waste Storage Area #2	Building 134	NFA						
	UST 41	S-A Fuel Line Leak Site	formerly of OU12	NFA; regulated as UST site						
	SWMU 3	EOD Range	Site 3; SWMU I-3; formerly of OU11	NFA						
	SWMU 5	Storage Tank for Waste POL	Site 5; SWMU I-5; formerly of OU8	NFA						
	SWMU 11	MAG 14 Supply Site	Site 11; SWMU I-11	NFA						
	SWMU 20	Training Area Four	Site 20; SWMU I-20	NFA						
	SWMU 33	VMGR 252 Accumulation Area	Site 33; SWMU F-22; formerly of OU10	NFA						
	SWMU 34	Crash Crew Accumulation Area	Site 34; SWMU F-38; formerly of OU10	NFA under CERCLA; managed under RCRA.						

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Current Status of FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU	Current Site/SWMU	Description	Other Identifications	Current Status	FY 2013 Activities		FY 2014 Activities		FY 2015 Activities	
	SWMU 35	MAG 14 Accumulation Area	Site 35; SWMU F-42; formerly of OU10	NFA						
	SWMU 36	H&HS 28 Accumulation Area	Site 36; SWMU S-6; formerly of OU10	NFA under CERCLA; managed under RCRA.						
	SWMU 37	MWCS 28 Accumulation Area	Site 37; SWMU S-11; formerly of OU9	NFA under CERCLA; managed under RCRA.						
	SWMU 38	DRMO Hazardous Waste Storage Facility	Site 38; SWMU C-1; formerly of OU11	NFA						
	SWMU 39	Facilities Maintenance Hazardous Waste Storage Facility	Site 39; SWMU C-2; formerly of OU11	NFA						
	SWMU 43	Sewage Treatment Plant	Site 43; SWMU C-5; formerly of OU11	NFA						
	SWMU 45	Current Sludge Application Areas	Site 45; SWMU C-11; formerly of OU11	NFA						
	SWMU 46	Polishing Ponds No. 1 and No. 2	Site 46; SWMU C-12; formerly of OU2	NFA						
	SWMU 48	MASS 1 Wash Rack	Site 48; SWMU S-10	NFA						
	SWMU 49A	MWCS 28 Oil/Water Separator and Leach Field near Building 4337 (MASS - 1)	Site 49A; SWMU C-17; formerly of OU9	NFA under CERCLA; managed under RCRA.						
	SWMU 49B	MACS 6 Oil/Water Separator and Leach Field near Building 1786	Site 49B; SWMU C-17; formerly of OU9	NFA under CERCLA; managed under RCRA.						
OU1	SWMU 50	PCB Transformer Spill	Site 50; AOC C-A	NFA						
	SWMU 54	MACS 6 Battery Room Leach Field		NFA under CERCLA; managed under RCRA.						
	SWMU 67	FS Smoke Buildings 1234 and 1235		NFA						
	SWMU 68	Cryogenics Area		NFA						
OU1	SWMU 71	Building 3909 Weapons Cleaning Area		NFA under CERCLA; managed under RCRA.						
	SWMU 80	MALS 14 Gunshop, OWS 10		NFA						
	SWMU 84	Golf Course Maintenance Area		NFA under CERCLA; managed under RCRA.						
	SWMU 99	Old Hospital Area		NFA						
	SWMU C-3	PCB-Contaminated Soil Pile		NFA						
	SWMU C-4	Industrial Wastewater Treatment Plant (Structures)	formerly of OU1	NFA						
	SWMU C-6	Fly Ash Holding Tank		NFA						

TABLE 2-1
Current Status of FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU	Current Site/SWMU	Description	Other Identifications	Current Status	FY 2013 Activities		FY 2014 Activities		FY 2015 Activities	
	SWMU C-7	Coal Yard Catchment Basin		NFA						
	SWMU C-8	Construction Landfill	formerly of OU4	NFA; regulated under State Solid Waste Program						
	SWMU C-9	Asbestos Disposal Area	formerly of OU4	NFA; regulated under the State Solid Waste Program.						
	SWMU C-13	Drainage System		NFA under CERCLA; managed under RCRA.						
	SWMU C-15	Oil/Water Separators		NFA under CERCLA; managed under RCRA.						
	SWMU C-16	PCB Transformer Storage Area		NFA						
	SWMU F-1	HMS 14 Wash Rack		NFA						
	SWMU F-2	HMS 14 UST		NFA						
	SWMU F-3	Hangar 250 Sump		NFA						
	SWMU F-4	VMGR 252 Aircraft Wash		NFA						
	SWMU F-5	VMAQ 2 Aircraft Wash Rack		NFA						
	SWMU F-6	VMA 332 Aircraft Wash Rack		NFA						
	SWMU F-7	HMS 32 Wash Rack		NFA						
	SWMU F-8	MAG 32 Waste Oil UST		NFA						
	SWMU F-9	MAG 32 Waste Hydraulic Fluid Storage Tank		NFA						
	SWMU F-10	MAG 32 Paint Booth		NFA						
	SWMU F-11	VMA 542 Waste Oil Aboveground Storage Tank		NFA						
	SWMU F-12	MAG 32 Aircraft Wash Rack and Sump		NFA						
	SWMU F-15	Crash Crew Fuel Tanker		NFA						
	SWMU F-16	HMS 14 Accumulation Area		NFA						
	SWMU F-17	HMS 14 Spent Battery Storage Area		NFA						
	SWMU F-18	HMS GSE #1 Accumulation Area		NFA						
	SWMU F-19	HMS GSE #2 Accumulation Area		NFA						
	SWMU F-20	VMGR 253 #1 Accumulation Area		NFA						
	SWMU F-21	VMGR 253 #2 Accumulation Area		NFA						
	SWMU F-23	VMAQ 2 Accumulation Area		NFA						
	SWMU F-24	HMS 14 Accumulation Area		NFA						
	SWMU F-25	VMA 332 Accumulation		NFA						
	SWMU F-26	VMA 533 Accumulation Area		NFA						

TABLE 2-1
Current Status of FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU	Current Site/SWMU	Description	Other Identifications	Current Status	FY 2013 Activities		FY 2014 Activities		FY 2015 Activities	
	SWMU F-27	SOES Accumulation Area		NFA						
	SWMU F-28	VMAT 203 Accumulation Area		NFA						
	SWMU F-29	HMS 32 #1 Accumulation Area		NFA						
	SWMU F-30	HMS 32 #2 Accumulation Area		NFA						
	SWMU F-31	HMS 32 GSE #1 Accumulation Area		NFA						
	SWMU F-32	HMS 32 GSE #2 Accumulation Area		NFA						
	SWMU F-33	VMA 223 Accumulation Area		NFA						
	SWMU F-34	VMA 542 #1 Accumulation Area		NFA						
	SWMU F-35	VMA 542 #2 Accumulation Area		NFA						
	SWMU F-36	VMA 231 Accumulation Area		NFA						
	SWMU F-37	VMA 332 Accumulation Area		NFA						
	SWMU F-39	HMS 32 Accumulations Area		NFA						
	SWMU F-40	Crash Crew Burn Pit Accumulation Area		NFA						
	SWMU F-41	MAG 32 #1 Accumulation Area		NFA						
	SWMU N-1	Paint Shop Water Curtain	formerly of OU1	NFA						
	SWMU N-2	Plating Shop Cleaning Vats	formerly of OU1	NFA						
	SWMU N-3	Metal Plating Shop Degreaser	formerly of OU1	NFA						
	SWMU N-4	Metal Cleaning Shop Vats	formerly of OU1	NFA						
	SWMU N-5	Cleaning Shop Vats	formerly of OU1	NFA						
	SWMU N-6	Chemical Stripline Cleaning Vats	formerly of OU1	NFA						
	SWMU N-7	Photo Lab and Cleaning Shop Holding Tank	formerly of OU1	NFA						
	SWMU N-8	Silver Recovery Tank in Photo Shop	formerly of OU1	NFA						
	SWMU N-9	Roto Head Repair Shop Parts Cleaner	formerly of OU1	NFA						
	SWMU N-10	Down Draft Paint Sump	formerly of OU1	NFA						
	SWMU N-11	Zinc Rinse Paint Sump	formerly of OU1	NFA						
	SWMU N-12	Plating System Tank	formerly of OU1	NFA						
	SWMU N-13	Anodizing Solution Tank	formerly of OU1	NFA						

TABLE 2-1
Current Status of FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU	Current Site/SWMU	Description	Other Identifications	Current Status	FY 2013 Activities		FY 2014 Activities		FY 2015 Activities	
	SWMU N-14	Typical Container Accumulation Area	formerly of OU1	NFA						
	SWMU N-15	Electroplating Shop Sump	formerly of OU1	NFA						
	SWMU N-16	Paint Shop Water Curtain	formerly of OU1	NFA						
	SWMU N-17	Cleaning Vats	formerly of OU1	NFA						
	SWMU N-18	Aircraft Paint Stripping Shop Sump	formerly of OU1	NFA						
	SWMU N-19	Central Transfer Area	formerly of OU1	NFA						
	SWMU N-20	Down Draft Aircraft Paint Booth	formerly of OU1	NFA						
	SWMU N-21	Plastic Media Blasting Cyclone	formerly of OU1	NFA						
	SWMU S-1	Boat Dock Waste Oil Aboveground Storage Tank		NFA						
	SWMU S-2	Navy Boat Dock Accumulation Area	Navy Boat Dock #2 Site	NFA; release regulated under UST program						
	SWMU S-3	Generator Shop Accumulation Area		NFA						
	SWMU S-4	MWSS 271 Accumulation Area		NFA						
	SWMU S-5	MWSS 274 Accumulation Area		NFA						
	SWMU S-7	MACS 6 Accumulation Area		NFA						
	SWMU S-8	MACS 6 Wash Rack		NFA						
	SWMU S-9	MASS 1 Accumulation Area		NFA						
	SWMU S-12	Pesticide Mixing Area New Shop		NFA						

Notes: Color Coding for Current Status:

- Preliminary Assessment/Site Investigation (PA/SI)
- Remedial Investigation/Feasibility Study (RI/FS)
- Proposed Plan/Record of Decision (PP/ROD)
- Remedy In Place (RIP)
- No Further Action (NFA)

LTM = Long-term Monitoring

LUC = Land Use Control

TABLE 2-2
Summary of Environmental Studies, Investigations, and Actions Completed to Date at ER Program Sites Identified in the FFA
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU No.	Site No.	Preliminary Studies		Preliminary Investigations	PS/TS	Removal Actions	RI/FS	RI	FS	DD	PRAP	Interim ROD	ROD	Remedial Design	Remedial Action	Site Closure
		IAS (1983)	RFA (1988)													
1	Site 14	X	X	SAR - 1994				2002; 2009	N/A	N/A	2010		2010	NFA	NFA	2010
	Site 15	X	X	IRI - 1988 RFI - 1993				2002; 2009	N/A	N/A	2010		2010	NFA	NFA	2010
	Site 16	X	X	IRI - 1988 RFI - 1991 TDM - 1992 & 1994	AS/SVE PS - 1996	Debris Piles - 1997 AS/SVE system installed in 1998 as part of the removal action; system shut down in 2005.	1996	2002; 2009; 2012		N/A						
	Site 17	X	X	RFI - 1992		PCB-contaminated soil and sediment - 1995		2002; 2009	N/A	N/A	2010		2010	NFA	NFA	2010
	Site 18	X	X	IRI - 1988				2002; 2009	N/A	N/A	2010		2010	NFA	NFA	2010
	Site 42				Pump and Treat System - 1996; Biobarrier PS - 2011-2012; Permeable Reactive Barrier PS		1996	2002; 2009	2011	N/A		NADEP Groundwater - 1996		Groundwater Pump and Treat System; Interim GW monitoring 2004-2005	Installation of GW Pump and Treat System - 1998 (system shut down in 2003); Interim GW monitoring 2004-2005	
	Site 47			Infiltration & Leakage Study - 1992	Bioremediation/ HRC TS - 2001; Biobarrier PS - 2011-2012; Permeable Reactive Barrier PS - 2012		1999	2002; 2009	2011	N/A						
	Site 51				Bioremediation/ HRC TS - 2005; Biobarrier PS - 2011-2012; Permeable Reactive Barrier PS - 2012			2002; 2009	2011	N/A				Building Decontamination and Renovation	Building Decontamination and Renovation - 1994	
	Site 52				Bioremediation/ HRC TS - 2005; Biobarrier PS - 2011-2012; Permeable Reactive Barrier PS - 2012			2002; 2009	2011	N/A		NADEP Groundwater - 1996		Building Decontamination and Renovation, Groundwater Pump and Treat System; Interim GW monitoring 2004-2005	Building Decon and Renovation - 1994; Installation of GW Pump and Treat System - 1998 (system shut down in 2003); Interim GW monitoring 2004-2005	
	Site 83			SAR - 1998				2002; 2009; 2011	N/A	N/A	2012					
	Site 92				Biobarrier PS - 2011-2012; Permeable Reactive Barrier PS - 2012		1996	2002; 2009	2011	N/A		NADEP Groundwater - 1996		Groundwater Pump and Treat System; Interim GW monitoring 2004-2005	Installation of GW Pump and Treat System - 1998 (system shut down in 2003); Interim GW monitoring 2004-2005	
	Site 98			Site Check - 1994 RRR - 1995	Biobarrier PS - 2011-2012; Permeable Reactive Barrier PS - 2012			2002; 2009	2011	N/A		NADEP Groundwater - 1996		Groundwater Pump and Treat System; Interim GW monitoring 2004-2005	Installation of GW Pump and Treat System - 1998 (system shut down in 2003); Interim GW monitoring 2004-2005	

TABLE 2-2
Summary of Environmental Studies, Investigations, and Actions Completed to Date at ER Program Sites Identified in the FFA
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU No.	Site No.	Preliminary Studies		Preliminary Investigations	PS/TS	Removal Actions	RI/FS	RI	FS	DD	PRAP	Interim ROD	ROD	Remedial Design	Remedial Action	Site Closure
		IAS (1983)	RFA (1988)													
2	Site 10	X	X	IRI - 1988 RFI - 1991 TDM - 1992 & 1994	SVE PS - 1996		1997	1997	1997; 2010	N/A	1996; 2011	N/A	1999; 2011	1999 - Soil Vapor Extraction System to treat four hot spots; LUCs, LTM of groundwater; 2011 - Add soil cover at Hot Spot 2	Soil Vapor Extraction System - 1997 (shut down in 2003); LUCs implemented - 1996; LTM of groundwater; 2011 - Add soil cover at Hot Spot 2	
	Site 46		X				1997	1997	1997	N/A	1996	N/A	1999	LUCs, LTM of groundwater	LUCs implemented - 1996; LTM of groundwater	
	Site 76			RRR - 1995			1997	1997	1997	N/A	1996	N/A	1999	LUCs, LTM of groundwater	LUCs implemented - 1996; LTM of groundwater	
3	Site 6	X	X	IRI - 1988 RFI - 1993			1996	1996	1996	N/A	1996		2000	Record Maintenance; ICs for groundwater and soil; LTM of groundwater; sludge removal and site revegetation	Sludge removal and site revegetation - 1996; ICs for groundwater and soil - 2000; LTM of groundwater (ended 2011)	
	Site 7	X	X	IRI - 1988 RFI - 1993 TDM - 1993		Removal/demolition of AS system scheduled to begin May 2007	1996	1996	1996	N/A	1996		2000	Record Maintenance, LUCS for groundwater and land, fencing and warning signs, in-situ bioremediation (air sparge system), LTM of groundwater	LUCS for groundwater and land - 1996; fencing and warning signs - 1998; in-situ bioremediation (air sparge system) - 2000 (system shut down in 2003, removed in 2007); LTM of groundwater (ended 2011)	
4	Site 4	X	X	IRI - 1988 RFI - 1993 TDM -1993				2001	2004	N/A	2005		2005	LUCs, LTM of groundwater	LUCs being implemented, LTM of groundwater	
5	Site 1	X	X	IRI - 1988 RFI - 1993				2003	2005	N/A	2005		2006	NFA	NFA	2006
	Site 2	X	X	IRI - 1988 RFI - 1993				2003	2005	N/A	2005		2006	LUCs, LTM of groundwater (ended 2011)	LUCs, LTM of groundwater (ended 2011)	2012
6	Site 12	X	X	RFI - 1993 TDM - 1993		Soil removal began March 2007 and was completed in May 2007		2005	2006	N/A	2006		2006	Soil removal, LTM of groundwater, LUCs	Soil removal, LTM of groundwater, LUCs	2008

TABLE 2-2
Summary of Environmental Studies, Investigations, and Actions Completed to Date at ER Program Sites Identified in the FFA
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU No.	Site No.	Preliminary Studies IAS (1983)	Preliminary Studies RFA (1988)	Preliminary Investigations	PS/TS	Removal Actions	RI/FS	RI	FS	DD	PRAP	Interim ROD	ROD	Remedial Design	Remedial Action	Site Closure
13	Site 19	X	X	IRI - 1988 RFI - 1993				2002	2004	N/A	2005		2005	LUCs, LTM of groundwater	LUCs, LTM of groundwater	
	Site 21	X	X	IRI - 1988 RFI - 1993 TDM - 1993				2002	2004	N/A	2005		2005	LUCs, LTM of groundwater	LUCs, LTM of groundwater	
	Site 44B			RFI - 1993				2002	2004	N/A	2005		2005	LUCs, LTM of groundwater	LUCs, LTM of groundwater	
14	Site 90							2008	2009	N/A	2009		2009	LUCs - 2010 LTM - 2011	LUCs, LTM of groundwater	
15	Site 82										2002		2003	NFA	NFA	2003
	POEIs 22 and 23 (SSAs 22 and 23			Site Visit - 1998						N/A						2008
	POEI 35a (SSA 35a)			Site Evaluation - 2001						2004						2004
	Site 85			SSA - 2003		Solid Waste Removal - 1998				2003						2003

DD - Decision Document
ERA - Ecological Risk Assessment
FFA - Federal Facilities Assessment
FS - Feasibility Study
IAS - Initial Assessment Study
IRI - Interim Remedial Investigation
PRAP - Proposed Remedial Action Plan
PS - Pilot Study
RFA - RCRA Facility Assessment
RFI - RCRA Facilities Investigation
RI - Remedial Investigation
ROD - Record of Decision
RRR - Relative Risk Ranking
SA - Site Assessment
SAR - SWMU Assessment Report
SI - Site Investigation
SRI - Supplemental Remedial Investigation
SSA - Site Screening Assessment
SSP - Site Screening Process Report
TDM - Technical Direction Memorandum
TS - Treatability Study

TABLE 2-3
Document Submittals for FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU No.	Activity	Author	Sites Included	Final Submittal/ Completion Date	ROD/IROD Signature Date
1	Visual Site Inspection	Water and Air Research	15	1982	
	Initial Assessment Study	Water and Air Research	14, 15, 16, 17,18, 42, 51, 52	March 1983	
	RCRA Facility Assessment	A. T. Kearney	14, 15, 16, 17, 18, 42, 51, 52	June 1988	
	Interim Remedial Investigation	NUS Corporation	15, 16, 17, 18	October 1988	
	Wastewater Treatment Facility Assessment	ATEC	42	May 1991	
	RCRA Facilities Investigation	NUS Corporation	16, 17	May 1991	
	RFI Trip Report	Halliburton NUS	51, 52	November 1991	
	Phase I Technical Direction Memorandum	Halliburton NUS	16	November 1992	
	21 Unit RCRA Facilities Investigation	Halliburton NUS	15	June 1993	
	90% Completion Report	Dames & Moore	51, 52	September 1993	
	Infiltration and Leakage Study	Halliburton NUS	47	November 1993	
	SWMU Assessment Report	U.S. Marine Corps	14	May 1994	
	Phase II Technical Direction Memorandum	Halliburton NUS	16	June 1994	
	Site Check	R. E. Wright Associates	98	May 1995	
	Relative Risk Ranking	Baker Environmental	98	November 1995	
	Focused Remedial Investigation/Feasibility Study	Brown & Root Environmental	16, 42, 92	February 1996	
	Remedial Action Report	OHM Remediation Services	51, 52	August 1996	
	Interim Record of Decision for NADEP Groundwater	Brown & Root Environmental	42, 52, 92, 98	August 1996	September 10, 1996
	Basis of Design Report	Brown & Root Environmental	16	April 1997	
	Sampling and Analysis Plan for Air Sparging and SVE	OHM Remediation Services	16	December 1997	
	Debris Pile Time-Critical Removal Action	OHM Remediation Services	16	January 1998	
	SWMU Assessment Report	Brown & Root Environmental	83	March 1998	
	Slocum Creek Fish Ingestion Report	Tetra Tech	OU1, OU2, OU3, OU4	June 1999	
	Remedial Action Report	OHM Remediation Services	42, 92	November 1999	
	Work Plan	CH2M HILL	47	January 2000	
	Long-Term Remedial Action Plan	OHM Remediation Services	42	January 2000	
	4th Quarter O&M Status Report for 1999	OHM Remediation Services	16, 42	February 2000	
	Long-Term Remedial Action Plan	OHM Remediation Services	16	April 2000	
	Remedial Action Report	OHM Remediation Services	16	November 2000	
	Remedial Investigation/Feasibility Study Work Plan	Tetra Tech	14, 15, 16, 17, 18, 42, 47, 51, 52, 83, 9	November 2000	
	O&M Status Report	OHM Remediation Services	16	February 2001	
	Treatability Study Work Plan	CH2M HILL	47	March 2001	
	O&M Status Report	OHM Remediation Services	42	May 2001	
	Remedial Investigation	Brown & Root Environmental	14, 15, 16, 17, 18, 42, 47, 51, 52, 83, 9	May 2002	
	Slocum Creek Screening Level Ecological Risk Assessment	Tetra Tech	OU1, OU2, OU3, OU4	November 2001	
	Annual Report 2001	Shaw	16	March 2002	
	Long Term Remedial Action Plan	Shaw	16	June 2002	
	Long Term Remedial Action Plan P&T/IWTP	Shaw	42, 92	June 2002	
	Annual Report 2002	Shaw	42, 92	June 2002	
	Ecological Risk Assessment Step 3A Addendum	CH2M HILL	14, 15, 16, 18, 42, 47, 51, 52, 83, 92, 9	July 2003	
	Treatability Study Technical Memoranda	CH2M HILL	47	August 2003	
	Baseline Ecological Risk Assessment Work Plan	CH2M HILL	14, 15, 16, 18, 42, 47, 51, 52, 83, 92, 9	May 2004	
	Quarterly O&M Status Report 3rd quarter 2003	CH2M HILL	16	September 2004	
	O&M Status Report, Pump & Treat System, 2nd quarter 2003	CH2M HILL	OU1	December 2004	
	O&M Status Report, 2nd quarter 2004	CH2M HILL	OU1	June 2005	
	O&M Status Report, 3rd quarter 2003	CH2M HILL	16	June 2005	
	O&M Status Report, 1st quarter 2004	CH2M HILL	16	June 2005	
	Annual O&M Status Report, 4th quarter 2003	CH2M HILL	16	June 2005	
	Quarterly O&M Status Report 4th quarter 2003	CH2M HILL	16	June 2005	
	Baseline Ecological Risk Assessment	CH2M HILL	OU1	August 2005	
	Post-BERA Investigation Work Plan for Operable Unit 1	CH2M HILL	OU1	July 2006	
	Technical Memorandum, May 2005, VGM at OU1	AGVIQ CH2M HILL JVI	OU1	July 2006	
	OU1 Treatability Study	CH2M HILL	OU1	December 2007	
	Engineering Evaluation/Cost Analysis (EE/CA), Sandy Branch Tributary 2	CH2M HILL	OU1	January 2008	
	Action Memorandum, Sandy Branch Tributary 2	CH2M HILL	OU1	April 2008	
	Technical Memorandum, Additional Investigation at 16GW04	CH2M HILL	16	May 2008	
	Removal Action Work Plan, Sandy Branch Tributary 2	Rhēa	OU1	June 2008	
	Sampling and Analysis Plan, Additional Investigations at OU1, Site 17	CH2M HILL	17	July 2008	
	OU1 Remedial Investigation Addendum	CH2M HILL	OU1	April 2009	
	Remedial Action Closeout Report, Sandy Branch Tributary 2	Rhēa	OU1	June 2009	
	AS/SVE System Removal Work Plan	Rhēa	16	June 2009	
	Sampling and Analysis Plan, Site 83	Rhēa	83	June 2009	
	Sampling and Analysis Plan, Vapor Intrusion Investigation	CH2M HILL	OU1	August 2009	
	Supplemental Investigation Report, OU1 Site 17	CH2M HILL	17	September 2009	
	AS/SVE System Decommission Report	Rhēa	16	February 2010	
	NFA Proposed Plan	Rhēa	14, 15, 17, 18, 40	March 2010	

TABLE 2-3
Document Submittals for FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU No.	Activity	Author	Sites Included	Final Submittal/ Completion Date	ROD/IROD Signature Date
1	Supplemental Investigation Report, OU1 Site 83	Rhēa	83	June 2010	
	NFA Record of Decision	CH2M HILL	14, 15, 17, 18, 40	September 2010	September 29, 2010
	Vapor Intrusion Investigation Report (Phase I)	CH2M HILL	OU1	January 2011	
	AS/SVE System Decommission Work Plan	Rhēa	16	February 2011	
	Sampling and Analysis Plan, OU1 Central Groundwater Plume Pilot Study	CH2M HILL	OU1	March 2011	
	Implementation Plan, OU1 Central Groundwater Plume Pilot Study	CH2M HILL	OU1	March 2011	
	Supplemental Remedial Investigation Report, OU1 Site 83	CH2M HILL	83	May 2011	
	Sampling and Analysis Plan, Vapor Intrusion Investigation (Phase 2)	CH2M HILL	OU1	May 2011	
	Technical Memorandum, Site 16 Human Health Risk Assessment	CH2M HILL	16	June 2011	
	OU1 Central Groundwater Plume FS	CH2M HILL	OU1	September 2011	
	OU1 Biobarrier Pilot Study Report	CH2M HILL	OU1	January 2012	
	Supplemental Remedial Investigation Report, OU1 Site 16	CH2M HILL	16	March 2012	
	Proposed Plan, OU1 Site 83	Rhēa	83	March 2012	
	Restoration Work Plan, Site 83	Rhēa	83	April 2012	
	Vapor Intrusion Investigation Report (Phase II)	CH2M HILL	OU1	May 2012	
	Sampling and Analysis Plan, Permeable Reactive Barrier Pilot Study	CH2M HILL	OU1	May 2012	
	Work Plan, Permeable Reactive Barrier Pilot Study	CH2M HILL	OU1	May 2012	
2	Hydrogeologic and Geotechnical Analysis	Schnabel Engineering	10	December 1981	
	Initial Assessment Study	Water and Air Research	10	March 1983	
	RCRA Facility Assessment	A. T. Kearney	10, 44A, 46	June 1988	
	Interim Remedial Investigation	NUS Corporation	10	October 1988	
	Groundwater Assessment	Ensafe	10	December 1988	
	Evaluation of Sludge Impoundment Area	Halliburton NUS	10	December 1991	
	RCRA Facility Investigation	NUS Corporation	10	May 1991	
	Phase I Technical Direction Memorandum	Halliburton NUS	10	November 1992	
	21 Unit RCRA Facilities Investigation	Halliburton NUS	44A	June 1993	
	Phase II Technical Direction Memorandum	Halliburton NUS	10	June 1994	
	Relative Risk Ranking	Baker Environmental	76	November 1995	
	Proposed Remedial Action Plan	Brown & Root Environmental	10, 44A, 46, 76	June 1996	
	Basis of Design Report for Air Sparging System	Brown & Root Environmental	10	April 1997	
	Remedial Investigation	Brown & Root Environmental	10, 44A, 46, 76	April 1997	
	Feasibility Study	Brown & Root Environmental	10, 44A, 46, 76	July 1997	
	Sampling and Analysis Plan	OHM Remediation Services	10, 44A, 46, 76	November 1997	
	Air Sparge Work Plan	OHM Remediation Services	10	December 1997	
	O&M Plan for SVE	OHM Remediation Services	10, 44A, 46, 76	June 1998	
	Record of Decision	Tetra Tech	10, 44A, 46, 76	March 1999	September 29, 1999
	LTM Remedial Action Plan	OHM Remediation Services	10, 44A, 46, 76	May 1999	
	Remedial Action Report	OHM Remediation Services	10, 44A, 46, 76	May 1999	
	Remedial Design Work Plan for Baseline LTM	CH2M HILL	10, 44A, 46, 76	May 1999	
	Slocum Creek Fish Ingestion Report	Tetra Tech	OU1, OU2, OU3, OU4	June 1999	
	Land Use Control Assurance Plan	U.S. Marine Corps	10, 44A, 46, 76	October 2000	
	O&M Status Report	OHM Remediation Services	10, 44A, 46, 76	December 2000	
	O&M Status Report	OHM Remediation Services	10, 44A, 46, 76	January 2001	
	Remedial Design/Remedial Action Report	CH2M HILL	10, 44A, 46, 76	October 2001	
	Slocum Creek Screening Level Ecological Risk Assessment	Tetra Tech	OU1, OU2, OU3, OU4	November 2001	
	Remedial Action Report	Shaw	10	January 2002	
	Long Term Remedial Action Report	Shaw	10	May 2002	
	LTM Work Plan	CH2M HILL	10, 44A, 46, 76	October 2002	
	LTM Annual Report	CH2M HILL	10, 44A, 46, 76	July 2003	
	O&M Status Report, 2nd quarter 2003	CH2M HILL	10	September 2004	
	Final Technical Memorandum re: January 2004 SVE Hot Spot Area sampling	Rhēa	10	January 2004	
	2003 LTM Report	CH2M HILL	OU2	June 2005	
	Final Technical Memorandum re: April 2005 SVE Hot Spot Area sampling	Rhēa	10	August 2005	
	2004 LTM Report	Rhēa	OU2	December 2005	
	Technical Memorandum re: April 2005 SVE Hot Spot Area sampling	Rhēa	10	May 2006	
	2005 LTM Report	Rhēa	OU2	June 2006	
	2006 LTM Report	Rhēa	OU2	October 2007	
	OU2 Site 10 Proposed Sampling Tech Memo	Rhēa	10	June 2008	
	2007 LTM Report	Rhēa	OU2	October 2008	
	2008 LTM Report	Rhēa	OU2	September 2009	
	Work Plan, OU2 Site 10 SVE System Decommission	Rhēa	10	April 2010	
	Construction Closeout Report, OU2 Site 10 SVE System Decommission	Rhēa	10	July 2010	
	2009 LTM Report	Rhēa	OU2	August 2010	
	Focused Feasibility Study, OU2 Site 10	Rhēa	10	February 2011	
	Proposed Plan, OU2 Site 10	Rhēa	10	March 2011	
	OU2 LTM Optimization Report	CH2M HILL	OU2	May 2011	
	Amended Record of Decision, OU2 Site 10	Rhēa	10	July 2011	September 26, 2011

TABLE 2-3
Document Submittals for FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU No.	Activity	Author	Sites Included	Final Submittal/ Completion Date	ROD/IROD Signature Date
2	2010 LTM Report	Rhēa	OU2	September 2011	
	Remedial Design, OU2 Site 10	Rhēa	10	December 2011	
	2011 LTM Report	Rhēa	OU2	December 2011	
	Sampling and Analysis Plan, OU2 LTM	CH2M HILL	OU2	June 2012	
3	Initial Assessment Study	Water and Air Research	6, 7	March 1983	
	RCRA Facility Assessment	A. T. Kearney	6, 7	June 1988	
	Interim Remedial Investigation	NUS Corporation	6, 7	October 1988	
	21 Unit RCRA Facilities Investigation	Halliburton NUS	6, 7	June 1993	
	10 Unit Technical Direction Memorandum	Halliburton NUS	6, 7	August 1993	
	Proposed Remedial Action Plan	Brown & Root Environmental	6, 7	June 1996	
	Remedial Investigation	Brown & Root Environmental	6, 7	December 1996	
	Feasibility Study	Brown & Root Environmental	6, 7	December 1996	
	Remedial Action Report	OHM Remediation Services	6, 7	January 1998	
	Sampling and Analysis Plan	OHM Remediation Services	6, 7	January 1999	
	Work Plan for Air Sparge System	OHM Remediation Services	7	January 1999	
	Remedial Design Work Plan for Baseline LTM	CH2M HILL	6, 7	May 1999	
	Slocum Creek Fish Ingestion Report	Tetra Tech	OU1, OU2, OU3, OU4	June 1999	
	O&M Plan	OHM Remediation Services	6, 7	May 2000	
	LTM Remedial Action Plan	OHM Remediation Services	6, 7	June 2000	
	Remedial Action Report	OHM Remediation Services	6, 7	August 2000	
	Record of Decision	Tetra Tech	6, 7	August 2000	October 24, 2000
	Land Use Control Assurance Plan	U.S. Marine Corps	6, 7	October 2000	
	O&M Status Report	OHM Remediation Services	6, 7	April 2001	
	Remedial Design/Remedial Action Report	CH2M HILL	6, 7	October 2001	
	Slocum Creek Screening Level Ecological Risk Assessment	Tetra Tech	OU1, OU2, OU3, OU4	November 2001	
	LTM Remedial Action Report - Air Sparging	Shaw	7	April 2002	
	Remedial Action Report	Shaw	7	May 2002	
	LTM Work Plan	CH2M HILL	6, 7	September 2002	
	Annual Report	Shaw	7	February 2003	
	LTM Monitoring Report	CH2M HILL	6, 7	October 2003	
	LTM Annual Report	CH2M HILL	6, 7	October 2003	
	LTM Quarterly Sampling Tech Memo	CH2M HILL	6,7	January 2004	
	Quarterly LTM Report	CH2M HILL	6,7	March 2004	
	2003 LTM Report	CH2M HILL	6,7	June 2005	
	2004 LTM Report	Rhēa	OU3	December 205	
	2005 LTM Report	Rhēa	OU3	June 2006	
	Site 7 System Removal After Action Report	Rhēa	7	July 2007	
	Interim Remedial Action Completion Report	CH2M HILL	6,7	September 2007	
	2006 LTM Report	Rhēa	OU3	October 2007	
	2007 LTM Report	Rhēa	OU3	September 2008	
	2008 LTM Report	Rhēa	OU3	September 2009	
	2009 LTM Report	Rhēa	OU3	July 2010	
	2010 LTM Report	Rhēa	OU3	September 2011	
	Remedial Action Completion Report	CH2M HILL	OU3	May 2012	
4	Initial Assessment Study	Water and Air Research	4	March 1983	
	RCRA Facility Assessment	A. T. Kearney	4	June 1988	
	Interim Remedial Investigation	NUS Corporation	4	October 1988	
	21 Unit RCRA Facilities Investigation	Halliburton NUS	4	June 1993	
	10 Unit Technical Direction Memorandum	Halliburton NUS	4	August 1993	
	Slocum Creek Fish Ingestion Report	Tetra Tech	OU1, OU2, OU3, OU4	June 1999	
	Remedial Investigation/Feasibility Study Work Plan	Tetra Tech	4	June 1999	
	Slocum Creek Screening Level Ecological Risk Assessment	Tetra Tech	OU1, OU2, OU3, OU4	November 2001	
	Remedial Investigation	Tetra Tech	4	June 2002	
	Focused Feasibility Study	CH2M HILL	4	June 2004	
	Proposed Remedial Action Plan	CH2M HILL	4	April 2005	
	Record of Decision	CH2M HILL	4	September 2005	September 14, 2005
	Remedial Design	CH2M HILL	4	April 2006	
	Interim Remedial Action Completion Report	CH2M HILL	4	October 2006	
	2006 LTM Report	CH2M HILL	OU4	April 2007	
	2007 LTM Report	CH2M HILL	OU4, OU5, OU6, OU13	August 2008	
	2008 LTM Report	Rhēa	OU4, OU5, OU6, OU13	September 2009	
	Sampling and Analysis Plan, Additional Investigation Activities	Rhēa	OU4	June 2010	
	2009 LTM Report	Rhēa	OU4, OU5, OU13	July 2010	
	2010 LTM Report	Rhēa	OU4, OU5, OU13	July 2011	
	Technical Memorandum, Supplemental Investigation	Rhēa	OU4	September 2011	

TABLE 2-3
Document Submittals for FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU No.	Activity	Author	Sites Included	Final Submittal/ Completion Date	ROD/IROD Signature Date
5	Initial Assessment Study	Water and Air Research	1, 2	March 1983	
	RCRA Facility Assessment	A. T. Kearney	1, 2	June 1988	
	Interim Remedial Investigation	NUS Corporation	1, 2	October 1988	
	21 Unit RCRA Facilities Investigation	Halliburton NUS	1, 2	June 1993	
	Work Plan	CH2M HILL	1, 2	February 2002	
	Remedial Investigation	CH2M HILL	OU5	August 2005	
	Focused Feasibility Study	CH2M HILL	OU5	October 2005	
	Proposed Remedial Action Plan	CH2M HILL	OU5	November 2005	
	Record of Decision	CH2M HILL	OU5	May 2006	July 21, 2006
	Remedial Design	CH2M HILL	OU5	October 2006	
	Interim Remedial Action Completion Report	CH2M HILL	OU5	September 2008	
	2007 LTM Report	CH2M HILL	OU4, OU5, OU6, OU13	August 2008	
	2008 LTM Report	Rhēa	OU4, OU5, OU6, OU13	September 2009	
	2009 LTM Report	Rhēa	OU4, OU5, OU13	July 2010	
	2010 LTM Report	Rhēa	OU4, OU5, OU13	July 2011	
	Remedial Action Completion Report	CH2M HILL	OU5	January 2012	
6	Initial Assessment Study	Water and Air Research	12	March 1983	
	RCRA Facility Assessment	A. T. Kearney	12	June 1988	
	21 Unit RCRA Facilities Investigation	Halliburton NUS	12	June 1993	
	Work Plan	CH2M HILL	12	January 1999	
	Supplemental Investigation Plan	AGVIQ/CH2M HILL	12	September 2003	
	Remedial Investigation	CH2M HILL	12	May 2005	
	Focused Feasibility Study	CH2M HILL	OU6	January 2006	
	Record of Decision	CH2M HILL	12	August 2006	September 28, 2006
	Remedial Design	CH2M HILL	OU6	June 2007	
	Remedial Action Work Plan	CH2M HILL	OU6	February 2007	
	Remedial Action Completion Report	CH2M HILL	OU6	August 2008	
	2007 LTM Report	CH2M HILL	OU4, OU5, OU6, OU13	August 2008	
	2008 LTM Report	Rhēa	OU4, OU5, OU6, OU13	September 2009	
13	Initial Assessment Study	Water and Air Research	19, 21	March 1983	
	RCRA Facility Assessment	A. T. Kearney	19, 21	June 1988	
	Interim Remedial Investigation	NUS Corporation	19, 21	October 1988	
	21 Unit RCRA Facilities Investigation	Halliburton NUS	19, 21, 44B	June 1993	
	10 Unit Technical Direction Memorandum	Halliburton NUS	21	August 1993	
	Remedial Investigation/Feasibility Study Work Plan	Tetra Tech	19, 21, 44B	June 1999	
	Remedial Investigation	Tetra Tech	19, 21, 44B	March 2002	
	Focused Feasibility Study	CH2M HILL	19, 21, 44B	July 2004	
	Proposed Remedial Action Plan	CH2M HILL	19, 21, 44B	March 2005	
	Record of Decision	CH2M HILL	19, 21, 44B	September 2005	September 14, 2005
	Remedial Design	CH2M HILL	19, 21, 44B	April 2006	
	May and November 2005 VGM Report	CH2M HILL	OU13	2006	
	Remedial Design	CH2M HILL	OU13	April 2006	
	Interim Remedial Action Completion Report	CH2M HILL	OU13	October 2, 2006	
	2006 LTM Report	CH2M HILL	OU13	April 2007	
	2007 LTM Report	CH2M HILL	OU4, OU5, OU6, OU13	August 2008	
	2008 LTM Report	Rhēa	OU4, OU5, OU6, OU13	September 2009	
	2009 LTM Report	Rhēa	OU4, OU5, OU13	July 2010	
	2010 LTM Report	Rhēa	OU4, OU5, OU13	July 2011	
14	Site Characterization and Evaluation Report for BRAC	Halliburton NUS	90	December 1994	
	Site Assessment Report	Law Engineering	90	June 1995	
	Site Assessment Addendum	Law Engineering	90	March 1996	
	Corrective Action Plan	Law Engineering	90	January 1997	
	RAC Action Work Plan	J.A. Jones Environmental	90	June 2000	
	Remedial Investigation Work Plan	CH2M HILL	90	August 2002	
	Phase I Remedial Investigation Interim Report	CH2M HILL	90	October 2003	
	Phase II Remedial Investigation Interim Report	CH2M HILL	90	June 2005	
	Phase III Remedial Investigation Interim Report	CH2M HILL	90	December 2007	
	Remedial Investigation Report	CH2M HILL	90	December 2008	
	Feasibility Study Report	CH2M HILL	90	April 2009	
	Proposed Plan	CH2M HILL	90	April 2009	
	Record Of Decision	CH2M HILL	90	August 2009	September 28, 2009
	Remedial Design for Land Use Controls	CH2M HILL	90	March 2010	
	Sampling and Analysis Plan for Baseline LTM Sampling	CH2M HILL	90	September 2010	
	Sampling and Analysis Plan, LTM	CH2M HILL	90	July 2011	
	Interim Remedial Action Completion Report	CH2M HILL	90	June 2011	
	2011 LTM Report	CH2M HILL	90	May 2012	
15	Proposed Remedial Action Plan	Tetra Tech	82	October 2002	
	Record of Decision	Tetra Tech	82	March 2003	June 11, 2003

TABLE 2-3
Document Submittals for FFA Sites
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

OU No.	Activity	Author	Sites Included	Final Submittal/ Completion Date	ROD/IROD Signature Date
Site 85	Wetland Delineation report for Site 85	Brown & Root Environmental	85	February 1998	
	Action Memorandum, Debris Removal	OHM Remediation Services	85	November 1998	
	Site Screening Process Work Plan	CH2M HILL	85	April 2001	
	Site Screening Process Report	CH2M HILL	85	November 2002	
	Site Screening Area Decision Document	CH2M HILL	85	September 2003	
POEI 35a	Soil/Groundwater Study	R. E. Wright Associates	35a	September 1996	
	Evaluation Report	CH2M HILL	35a	June 2004	
	Decision Document	CH2M HILL	35a	June 2004	

\\aphrodite\projects\USNavFacEngCom\CherryPoint\Projects\SMP_FY08\Figure 2-1 - Base Location Map.mxd

Legend
- Military Installation
- County Boundary
- Rivers and Streams

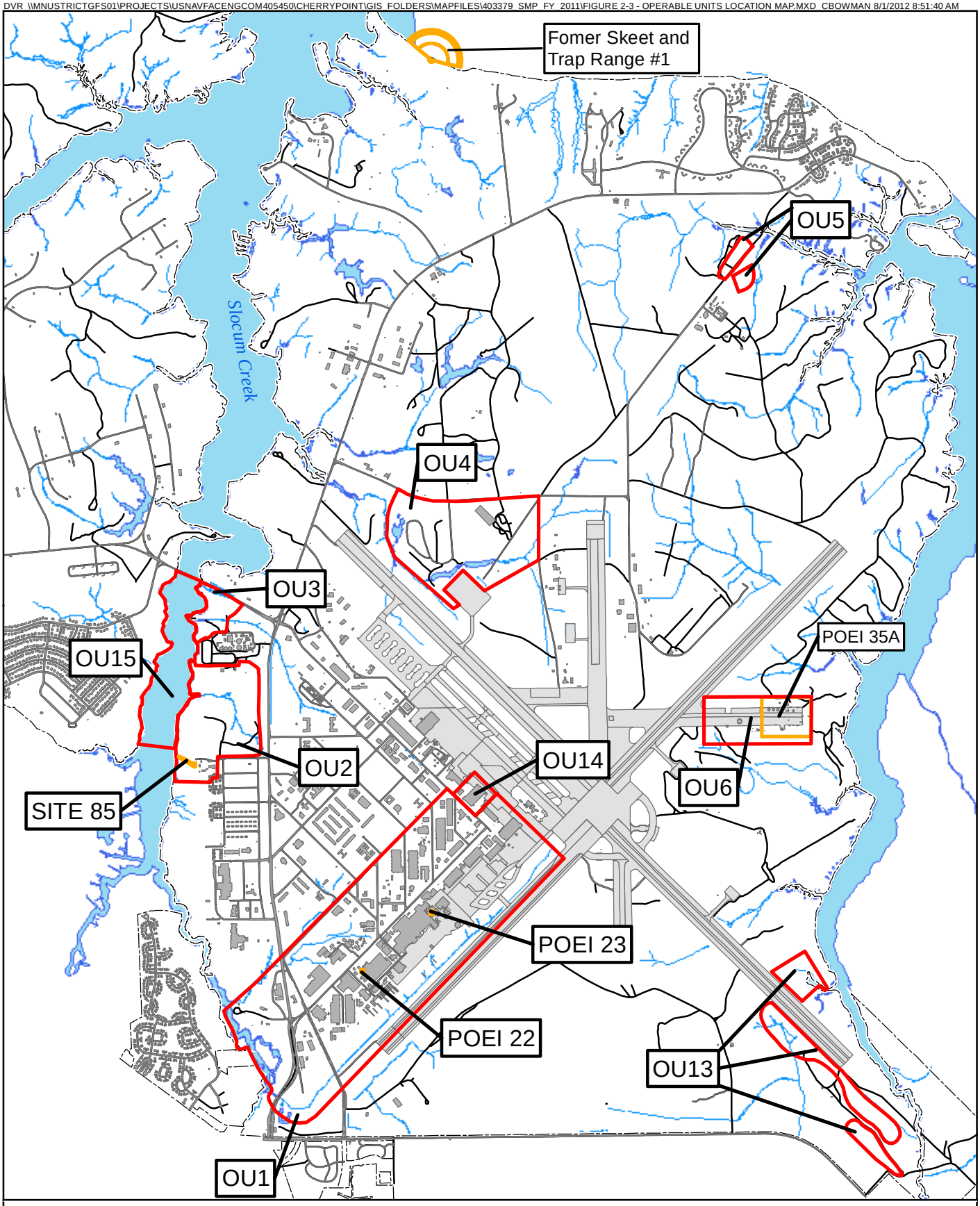
N
W E
S

0 20,000 40,000
Feet

Figure 2-1
Base Location Map
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 2-3 - OPERABLE UNITS LOCATION MAP.MXD CBOWMAN 8/1/2012 8:51:40 AM



Legend

- OU Boundary
- Site Boundary
- Buildings
- Runway
- Road
- Base Boundary
- Surface Water

N
W E
S

0 1,500 3,000
Feet

Figure 2-3
Operable Units Location Map
MCAS Cherry Point, North Carolina

CH2MHILL

SECTION 3

Descriptions of PA/SI Sites

The following subsection discusses the site history, summarizes previous investigations, and presents future activities for the one MRP site that is in the PA/SI phase of the CERCLA process. There are no IRP sites in the PA/SI phase.

3.1 MRP PA/SI Sites

3.1.1 Former Skeet and Trap Range #1

Former Skeet and Trap Range #1 is located within MCAS Cherry Point along the Neuse River adjacent to the golf course, and is a part of the MCAS Cherry Point NPL site (**Figure 3-1**). The former shooting station was located in an area that is currently a forested riparian buffer zone between the golf course greenway and the Neuse River. The shooting station was oriented to the north with almost the entire shotfall zone being in the Neuse River.

According to the *Range Identification and Preliminary Range Assessment* (USACE, 2001), MCAS Cherry Point requested the construction of six skeet or trap sets and two shotgun flexible mounts on September 8, 1943. Both skeet and trap shooting were conducted at the range site. Skeet shooting consisted of a shooter moving through a series of eight stations shooting at clay target disks, which are thrown from elevated towers. Trap shooting consisted of a shooter standing at one location shooting at clay target disks that are thrown from a pithouse. Shooting is done with shotguns using varying sizes of lead shot. The site was in use before the United States Fish and Wildlife Service (USFWS) regulated the use of lead shot to protect waterfowl from the effects of lead poisoning. The Skeet Range appears on maps from 1949 through 1955 and is no longer used for the firing of live ammunition, as the site is now associated with the golf course (USACE, 2001). The *Range Identification and Preliminary Range Assessment* (USACE, 2001) states that the types of munitions used at the range included 12-gauge shotguns and number 7½ shot. No information is available regarding the quantity of munitions that were used.

Field activities for an SI were completed in May 2009, and included the collection of surface water samples that were analyzed for total and dissolved metals, hardness, PAHs, and water quality parameters; sediment samples that were analyzed for metals, PAHs, grain size, and total organic carbon; and surface soil samples that were analyzed for metals, PAHs, and perchlorate. Findings of the field activities are documented in the SI report finalized in October 2010 (CH2M HILL, 2010b). The Navy conducted an Expanded SI to collect additional samples to further characterize PAH concentrations in surface water and sediment in and around the Former Skeet and Trap Range #1. The Expanded SI SAP was finalized in December 2011 (CH2M HILL, 2011h). The Expanded SI fieldwork was conducted in February 2012.

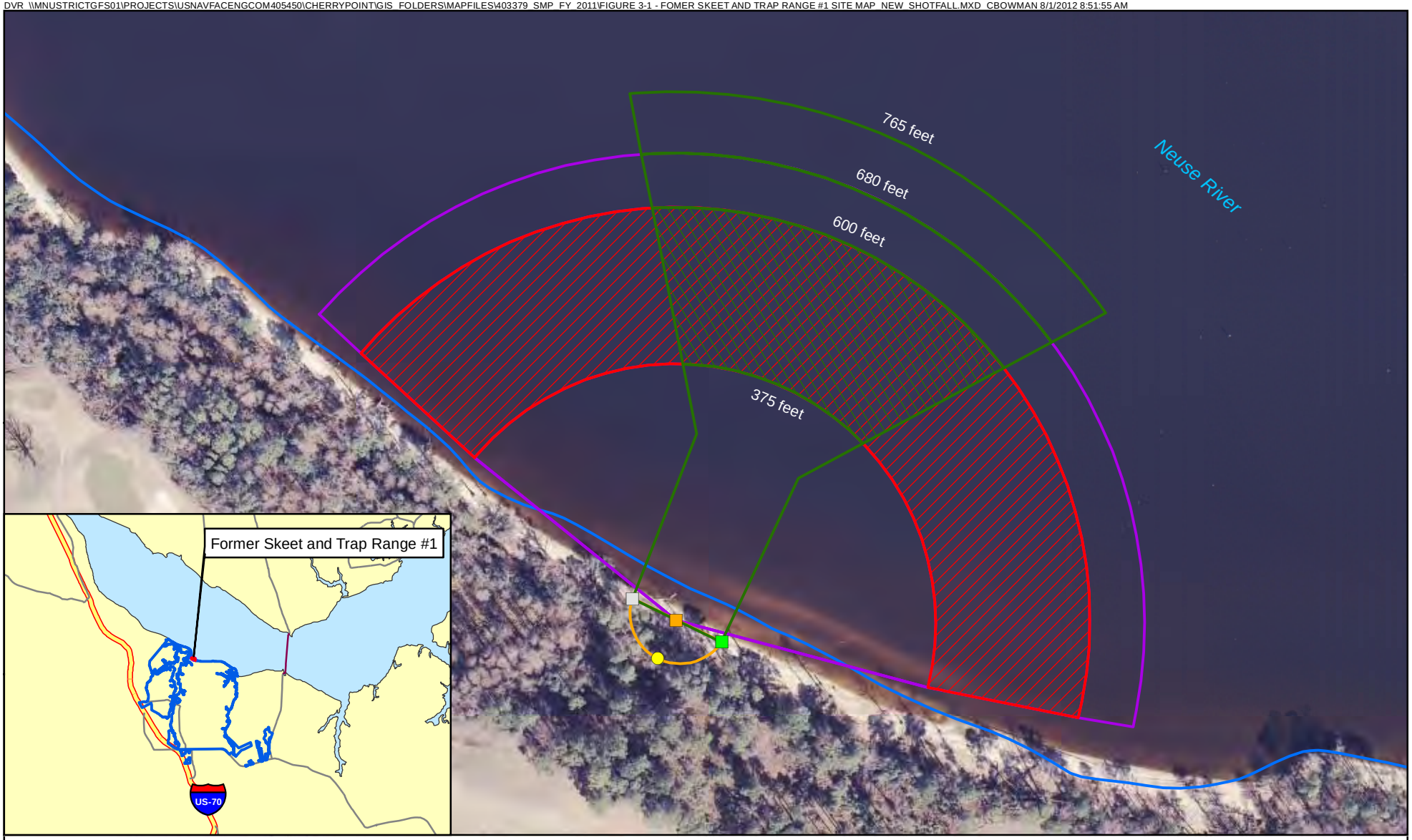
Site History—Former Skeet and Trap Range #1

Event	Date
Field Investigation	May 2009
Site Inspection Report	2010
Expanded SI SAP	2011

3.1.1.1. Future Actions

Based on detections of several PAHs in soil, surface water, and sediment during the SI and Expanded SI, the Navy has pursued the development of a Watershed Contaminated Source Document (WCSD) to determine whether these detections are related to Former Skeet and Trap Range #1 or the result of non-site-related, anthropogenic sources of contamination. The Expanded SI report and WCSD are expected to be completed in early FY2013.

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 3-1 - FOMER SKEET AND TRAP RANGE #1 SITE MAP_NEW_SHOTFALL.MXD CBOWMAN 8/1/2012 8:51:55 AM



Legend

- Installation Boundary
- Former Skeet and Trap Range #1
- Theoretical Skeet Shotfall Zone
- Area of Maximum Skeet Shotfall
- Theoretical Trap Shotfall Zone
- Area of Maximum Trap Shotfall
- High House
- Low House
- Control House
- Pit House

N
W E
S

0 100 200
Feet

Figure 3-1
Former Skeet and Trap Range #1
MCAS Cherry Point
North Carolina

CH2MHILL

SECTION 4

Descriptions of RI/FS Sites

There are currently no IRP or MRP sites in the RI/FS phase of the CERCLA process.

SECTION 5

Descriptions of PRAP and ROD Sites

The following subsection discusses the site histories, summarizes previous investigations, and presents future activities for the 8 IRP sites that are in the PRAP and ROD phase of the CERCLA process. These sites constitute 8 of the 12 FFA sites that collectively form OU1. The remaining 4 OU1 FFA sites are in the RC phase of the CERCLA process (see Section 7.2.1).

5.1 IRP PRAP and ROD Sites

5.1.1 Operable Unit 1

5.1.1.1. Background

OU1 is an industrial area in the southern portion of MCAS Cherry Point that covers approximately 565 acres. There are 12 FFA sites within OU1 (Sites 14, 15, 16, 17, 18, 42, 47, 51, 52, 83, 92, and 98), assigned on the basis of their proximity to each other within the industrialized section of MCAS Cherry Point. Six of these sites have been identified as contributing chlorinated volatile organic compound (cVOC) contamination to groundwater (Sites 42, 47, 51, 52, 92, and 98) and constitute the OU1 Central Groundwater Plume[1]. The boundaries of OU1 and the site locations within OU1 are shown on **Figure 5-1**.

Eight sites within OU1 were identified in the IAS and RFA, including Sites 14, 15, 16, 17, 18, 42, 51, and 52. The remaining four sites, 47, 83, 92, and 98, were identified during various subsequent studies conducted at OU1. Between January 1985 and February 1987, an Interim Remedial Investigation (IRI) was conducted at OU1 to identify contaminated sites, and included Sites 15, 16, 17, and 18. An RI and FS were recommended (NUS, 1988). An RFI was conducted for Sites 16 and 17 in 1991.

A Focused RI/FS was conducted for OU1 groundwater in 1996, and identified data gaps and recommended a treatability study at Sites 16, 42, and 92, such as a bench-scale enhanced oxidation study (B&R, 1996a). An Interim Record of Decision (IROD) for the OU1 Central Groundwater Plume (B&R, 1996c) documented that a groundwater extraction and treatment (commonly called “pump-and-treat”) system be installed for groundwater remediation. This pump-and-treat system was installed in 1998. As a result of decreasing efficiency and the potential for interference with ongoing attempts to further define the nature and extent of groundwater contamination beneath OU1 by altering local groundwater gradients, the pump and treat system was shut down in February 2005. Quarterly and annual reports of system status and routine monitoring were submitted during the period of operation. Decommission of the system components is planned for FY2013.

In 1996, a pilot-scale air sparge/soil vapor extraction (AS/SVE) system was installed at Site 16 to perform groundwater remediation (B&R, 1997c). In 1997, a time-critical removal action was conducted at Site 16 that included removal of debris piles containing asbestos, steel storage tanks, and soil contaminated with petroleum hydrocarbons (OHM, 1998a). A full-scale AS/SVE system was installed in 1998 as part of a NTCRA. The MCAS Cherry Point ER Program Partnering Team agreed to shut down the AS/SVE system in February 2005 because it was not achieving the RAOs. The system components were initially left in place in order to allow for later reuse. In 2008, an evaluation was performed to determine the condition of the system components and the actions necessary to restore the system to operation. The evaluation revealed that the system components had degraded such that reuse without substantial equipment replacement and rehabilitation would not be possible. The major system components were removed in 2009 and the remainder of the system was decommissioned (including well abandonment) in 2011.

An RI was completed in 2002 and included all of the sites within OU1. The 2002 RI report recommended an FS and additional ecological evaluation for OU1 (TT, 2002b).

[1] The OU1 Central Groundwater Plume has been referred to in previous documents as the “OU1 Central NADEP Groundwater Plume,” the “OU1 Central Hotspot Groundwater Plume,” or variations of both.

Voluntary groundwater monitoring (VGM) was conducted at select OU1 monitoring wells on a semiannual basis in 2004 and 2005. The objectives of the VGM program were to track potential plume migration and to maintain awareness of plume configuration. The Final 2005 OU1 VGM Report was submitted in July 2006 (AGVIQ/CH2M HILL, 2006a). A more comprehensive groundwater sampling event involving the majority of monitoring wells at OU1 was conducted in April 2006. Data from this event have been reported in an OU1 RI Addendum (CH2M HILL, 2009a).

Fish tissue samples were collected from Slocum Creek adjacent to OUs 1, 2, 3, and 4 in 1998, and the results indicated no potential unacceptable risk to human health from fish tissue ingestion (TT, 1999b). In 1999, surface water and sediment samples were collected adjacent to OUs 1, 2, 3, and 4 as part of a Screening-level Ecological Risk Assessment (SLERA) in Slocum Creek (TT, 2001). No consistent patterns of contamination were observed. The results indicated that ecological risks in Slocum Creek surface water and sediments from organic chemicals were low, while risks from some metals in sediments were higher. However, a decline in metals concentrations over time was noted and it was also suggested that the locations of elevated concentrations of some metals in sediments were correlated with the outfalls of the former MCAS Cherry Point STP as well as the Havelock STP, neither of which are part of any OUs. The SLERA report concluded that further detailed ecological study in Slocum Creek was not necessary.

The results of Step 3A of the Ecological Risk Assessment (ERA) presented in the 2002 OU1 RI report (TT, 2002b) indicated that ecological risks were present from a few organic chemicals and metals in surface soil and sediment in specific areas at OU1. A Step 3A Addendum report was prepared in 2003 (CH2M HILL, 2003b), and refined the ERA results from the earlier RI report. The Step 3A Addendum identified several inorganic and organic contaminants of potential concern (COPCs) for both terrestrial and aquatic receptors, and recommended that potential risk from these contaminants be evaluated in a Baseline Ecological Risk Assessment (BERA) for OU1. The Step 3A Addendum report also identified Site 17 as a potential source of COPCs to School House Branch. It was recommended that Site 17 be excluded from the BERA and that investigation activities be conducted separately. The BERA, which was executed in May 2004 and finalized in August 2005 (CH2M HILL, 2005c), concluded that significant ecological risk was present for aquatic, lower trophic receptors (benthic macroinvertebrates) in Sandy Branch Tributary #2 and its adjacent floodplain areas from exposure to inorganic and organic COPCs.

As recommended in the BERA, additional sampling within Sandy Branch Tributary #2 and adjacent flood plain areas was performed in March 2006 in accordance with the plan presented in the technical memorandum entitled *Post-BERA Investigation Work Plan for Operable Unit 1, Marine Corps Air Station Cherry Point, North Carolina* (CH2M HILL, 2005b). The purpose of the sampling activities was to delineate the spatial extent of COPCs. Furthermore, the memorandum focused the BERA-identified COPC list to 10 chemicals or chemical groups and established preliminary remediation goals (PRGs) to apply toward an eventual sediment cleanup in the Tributary #2 system.

The March 2006 Post-BERA sampling results were discussed by the MCAS Cherry Point ER Partnering Team at several meetings in 2006 and 2007. Through these discussions, a “clean-up” strategy for Sandy Branch Tributary #2 and adjacent flood plain areas was planned that would be carried out as a NTCRA. The NTCRA was intended to remove COPC-contaminated media to levels protective of at-risk ecological receptors (i.e., benthic macroinvertebrates). In preparation for the NTCRA, an EE/CA was prepared and finalized in January 2008 (CH2M HILL, 2008a). The EE/CA compared and evaluated several removal action alternatives and formed the basis of the selection of a sediment and soil removal technique for the NTCRA. The Removal Action Work Plan was completed in May 2008 (Rhēa, 2008) and the NTCRA was conducted in June to August 2008. The Final Remedial Action Closeout Report was submitted in June 2009 (Rhēa, 2009).

The sites comprising the Central Groundwater Plume within OU1 have recently completed the RI/FS stage of the CERCLA process and are currently in the Proposed Plan stage. A Final RI Addendum report was submitted in April 2009 that updates the OU1 site conceptual model and presents the results of additional investigation activities related to the OU1 Central Groundwater Plume that have been conducted since the 2002 RI report. A key element of the RI Addendum is better delineation of the nature and extent of cVOC groundwater contamination beneath

and near Building 133. A baseline groundwater sampling event at Building 133, which was performed in advance of a treatability study to evaluate an enhanced biodegradation technology for treating cVOCs in groundwater, indicated that the cVOC plume within Building 133 extended beyond previously delineated boundaries and had concentrations significantly higher than previously found.

FS activities began for the OU1 Central Groundwater Plume following the completion of the OU1 RI Addendum in April 2009; the OU1 Central Groundwater Plume FS was finalized in August 2011 (CH2M HILL, 2011g).

A vapor intrusion (VI) investigation was conducted for the Central Groundwater Plume portion of OU1 to determine if vapors emanating from the plume pose an indoor air human health risk to potential occupants of buildings situated above the plume. The VI investigation began in 2008, and was multi-phased in nature. The VI Evaluation report detailing the results of the first phase of the investigation was finalized in January 2011 (CH2M HILL, 2011a). Based on the findings and recommendations for further investigation activities from the Phase I evaluation, the Phase II VI investigation activities were completed in May and June 2011 and the Phase II Vapor Intrusion Investigation Report was finalized in May 2012 (CH2M HILL, 2012d). The conclusions of the VI investigation indicated that vapor mitigation is not required for existing buildings within OU1 based on current conditions. However, the final report recommended that a performance monitoring program be included as part of the selected remedy for the OU1 Central Groundwater Plume. The performance monitoring program would consist of the routine collection of subslab, indoor, and outdoor air samples at selected buildings in the vicinity of the plume and routine building survey updates. In addition, the final report recommended that additional VI investigation activities be conducted if either new construction is planned or if construction activities involving penetration of the foundation slab is implemented at existing buildings in the plume area.

The other FFA sites at OU1 that are not source areas for the OU1 Central Groundwater Plume (Sites 14, 15, 16, 17, 18, and 83) are at various stages in the CERCLA process. An NFA ROD was signed for Sites 14, 15, 17, 18, and 40 (CH2M HILL, 2010c) in September 2010 (see Section 7.2.1).

With regard to the remaining OU1 sites, Sites 16 and 83, a supplemental investigation was conducted in 2009 at Site 83 to determine whether pesticide contamination has been sufficiently delineated. A report of the findings of this investigation was finalized in May 2010 (Rhēa, 2010b). Additional assessments of human health risk were conducted for both Sites 83 and 16 in 2010 and 2011, respectively, to include more recent data collected since the 2002 OU1 RI. The Site 83 human health risk evaluation was completed in August 2010 based on the findings of the Site 83 supplemental investigation. The evaluation concluded that for both current and potential future land use, Site 83 does not pose unacceptable health risks to any of the evaluated receptors. Subsequently, a Supplemental RI Report was prepared that included a summary of the investigation results and human health and ecological risk evaluations performed at Site 83. The Site 83 Supplemental RI Report was finalized in May 2011 (CH2M HILL, 2011b) and concluded that no further action is warranted for Site 83 and recommended that the site proceed to an NFA Proposed Plan and ROD. The NFA Proposed Plan for Site 83 was finalized in March 2012 (Rhēa, 2012) and the NFA ROD was submitted in September 2012.

The Site 16 human health risk evaluation was completed in May 2011 and included more recent data collected as part of the 2005 BERA. The evaluation concluded that human health risks fall within the target range for acceptable risk for the relevant exposure scenarios. A Supplemental RI Report for Site 16 was prepared that included a summary of the investigation results and human health and ecological risk evaluations performed at Site 16. The Supplemental RI Report concluded that no further action is warranted for Site 16 and recommended that the site proceed to an NFA Proposed Plan and ROD (CH2M HILL, 2012b). The Draft Site 16 NFA Proposed Plan was submitted in August 2012.

History—Operable Unit 1

Event	Site	Date
IAS	14, 15, 16, 17, 18, 42, 51, 52	1983
RFA	14, 15, 16, 17, 18, 42, 51, 52	1988
IRI	15, 16, 17, 18	1988

Event	Site	Date
Focused RI/FS	16, 42, 92	1996
Interim ROD	42,52, 92, 98	1996
Slocum Creek Fish Ingestion Report	OU1	1999
RI/FS Work Plan	OU1	2000
Slocum Creek SLERA	OU1	2001
RI	OU1	2002
ERA Step 3A	OU1	2003
BERA	OU1	2005
VGM	OU1	2004 to 2005
EE/CA for Sandy Branch Tributary #2		2008
Action Memorandum for Sandy Branch Tributary #2		2008
Removal Action Work Plan, Sandy Branch Tributary #2		2008
RI Addendum	OU1	2009
Sampling and Analysis Plan – OU1 Vapor Intrusion Investigation	OU1	2009
Remedial Action Closeout Report for Sandy Branch Tributary #2		2009
Proposed Plan for Sites 14, 15, 17, 18, and 40	OU1	2010
NFA ROD for Sites 14, 15, 17, 18, and 40	OU1	2010
Vapor Intrusion Evaluation Report (Phase I)	OU1	2011
Sampling and Analysis Plan – OU1 Vapor Intrusion Investigation (Phase 2)	OU1	2011
Implementation Plan – Near Source In-Situ Enhanced Bioremediation Pilot Study	OU1	2011
Sampling and Analysis Plan – Near Source In-Situ Enhanced Bioremediation Pilot Study	OU1	2011
FS	OU1	2011
Vapor Intrusion Evaluation Report (Phase II)	OU1	2012
Implementation Plan – Permeable Reactive Barrier Pilot Study	OU1	2012
Sampling and Analysis Plan – Permeable Reactive Barrier Pilot Study	OU1	2012

5.1.1.2. Sites Contributing to the OU1 Central Groundwater Plume (Sites 42, 47, 51, 52, 92, and 98)

The 1996 Focused RI/FS report identified a volatile organic compound (VOC) plume at OU1. At that time, the plume had been delineated to include the majority of the southern portion of OU1, including a small portion of Building 133.

Six sites within OU1 have been identified as contributing to VOC groundwater contamination within the OU1 Central Groundwater Plume. The locations of these sites are shown in **Figure 5-2**. These sites include:

- Site 42 – Industrial Wastewater Treatment Plant (IWTP)
- Site 47 – Industrial Area Sewer System
- Site 51 – Building 137 Former Plating Shop
- Site 52 – Building 133 Former Plating Shop and Ditch
- Site 92 – VOCs in Groundwater near the Stripper Barn
- Site 98 – VOCs in Groundwater near Building 4032

An enhanced bioremediation treatability study involving the injection of Hydrogen Release Compound (HRC®) into surficial aquifer groundwater at Site 51 was initiated in 2001. The work plan for the treatability study also initially included investigation activities in portions of Sites 47 and 92; however, the treatability study targeted Site 51. Groundwater monitoring of VOCs and geotechnical parameters was conducted prior to the HRC® injection in late

2001 and during six post-injection monitoring events conducted over a 1-year period. At the end of the 1-year period, the concentration of total cVOCs had been reduced more than 90 percent in the heart of the plume, but individual constituents remained at concentrations that exceeded regulatory screening criteria (CH2M HILL, 2003c). The study concluded that additional treatment would be required to further reduce concentrations.

In addition, an enhanced bioremediation treatability study involving the injection of EHC™ into surficial aquifer groundwater was initiated in 2005 at Buildings 137 and 133 for Sites 51 and 52, respectively. The purpose of the treatability study was to determine the effectiveness of the technique to remediate what were understood from previous investigations to be relatively small cVOC plume areas in the shallow groundwater beneath each site. The treatability study included four post-injection monitoring events over a 10-month period. The final post-injection performance monitoring event was completed in November 2005. The results are summarized in a December 2007 Treatability Study Report (CH2M HILL, 2007) that indicated that the EHC™ injection was initially effective in reducing cVOC concentrations in wells located near the injection points and that cVOC mass reduction was achieved. However, the concentrations of some of the contaminants rebounded significantly with time, in part due to under-dosing of the injected substrate as well as the likely presence of contributing cVOC sources such as dense non-aqueous phase liquids (DNAPLs) in the aquifer.

A baseline groundwater sampling event was conducted prior to the EHC™ injection in December 2004 to establish pre-treatability study conditions. The results of the baseline sampling event showed that the cVOC concentrations beneath Building 133 (Site 52) were significantly higher than had been previously found, and that the cVOC plume at OU1 extended beyond the previously delineated boundaries identified in the 2002 OU1 RI. Based on these results, in spring 2005, a field investigation was conducted at Building 133, using direct-push technology (DPT) and membrane interface probe (MIP) technology to determine the extent of the groundwater plume. Soil and groundwater samples were collected using DPT, and the MIP technology was used to collect instantaneous readings of possible contamination in groundwater. The results indicated the likely presence of trichloroethene (TCE) in DNAPL form beneath Building 133.

In February and March 2006, 65 monitoring wells were installed in and around Building 133, and two monitoring wells were installed near Sandy Branch Tributary #2. In April and May 2006, groundwater samples were collected from 183 monitoring wells, including the newly installed wells. In August 2008, an additional investigation was performed at OU1 to further define the horizontal and vertical extent of cVOC groundwater contamination in the OU1 Central Groundwater Plume. Five new monitoring wells were installed and groundwater samples were collected from the new wells and 5 existing monitoring wells. The results from the 2006 and 2008 sampling are presented in the OU1 RI Addendum (CH2M HILL, 2009a).

A VI evaluation was initiated in 2008 to assess potential human health risks from the migration of cVOC vapors from the OU1 Central Groundwater Plume into the interiors of buildings located above the plume. The VI investigation is multi-phased in nature, proceeding in a step-wise approach to evaluate the potential indoor air VI pathway. As part of the VI evaluation, a Sampling and Analysis Plan (SAP) was prepared in 2009 to conduct groundwater and soil gas sampling near selected OU1 buildings (CH2M HILL, 2009b). The Phase 1 OU1 VI field sampling was conducted in November 2009. A VI Evaluation report that included the results of the Phase 1 field sampling was finalized in January 2011 (CH2M HILL, 2011a). In May 2011, the Phase 2 VI Evaluation SAP was finalized (CH2M HILL, 2011c) and Phase 2 field sampling was performed in May and June 2011. The Phase II VI Investigation Report was finalized in May 2012 (CH2M HILL, 2012d) and determined that vapor mitigation is not required for existing buildings based on current conditions. It was recommended that a performance monitoring and construction planning program be incorporated into the selected remedy for the OU1 Central Groundwater Plume to continue VI evaluation in the future.

In April and May 2009, additional groundwater investigation activities were conducted within the Central Groundwater Plume at OU1 with two objectives: (1) to further define the horizontal and vertical extent of cVOC groundwater contamination, and (2) to provide data to further evaluate the efficacy of natural attenuation on cVOCs within the Central Groundwater Plume. Fourteen new monitoring wells were installed to address plume delineation data gaps, and a large-scale groundwater sampling event was conducted in which the 14 new wells

and 160 existing wells were sampled for VOCs and natural attenuation parameters. The results of the 2009 additional investigation activities were reported in a technical memorandum in January 2010 (CH2M HILL, 2010d) and the data were utilized in the FS for the OU1 Central Groundwater Plume, which was finalized in FY 2011.

Future Activities

The Draft PRAP for the OU1 Central Groundwater Plume is expected to be submitted in early FY2013. Upon approval of the PRAP, the preparation of the OU1 Central Groundwater Plume ROD will commence.

Two pilot studies are underway to investigate the efficacy of potential groundwater treatment options to address the OU1 Central Groundwater Plume. The purpose of these pilot studies is to gather information to aid in the selection of potential remedies to address the plume and also to possibly contribute in the Remedial Design phase. The first is a field-scale pilot study to evaluate the site-specific effectiveness of in-situ enhanced bioremediation downgradient of Building 133 near the source of the OU1 Central Groundwater Plume. This pilot study will also gather data necessary for the optimization of full-scale implementation following remedy selection. It includes the installation of 14 injection wells (seven nested pairs, each consisting of one upper surficial and one lower surficial aquifer well) and 5 monitoring wells (two upper surficial and three lower surficial aquifer wells), the injection of reagents (i.e., emulsified vegetable oil and a bioaugmentation culture), and post-injection performance monitoring via 5 rounds of groundwater sampling and analysis. The Pilot Study Implementation Plan (CH2M HILL, 2011c) and Sampling and Analysis Plan (CH2M HILL, 2011d) were finalized in March 2011, and pilot study field activities were completed in June 2011. Post-injection groundwater monitoring activities are underway and will be completed in 2013.

In March 2011, the MCAS Cherry Point Partnering Team agreed to move forward on a second pilot study to construct a permeable reactive barrier (PRB) in the downgradient portion of the Central Groundwater Plume near East Prong Slocum Creek. The Implementation Plan and Sampling and Analysis Plan for the PRB pilot study were finalized in May 2012 (CH2M HILL, 2012e and 2012f). The PRB installation, site restoration, and installation of additional monitoring wells for PRB performance monitoring was completed in August and September 2012. The PRB is approximately 600 feet in length and consists of a combination of zero-valent iron and sand. The results of the PRB pilot study will help determine the maximum feasible trenching depth that can be achieved given the subsurface conditions at MCAS Cherry Point and may also provide valuable data for a future RD report for the Central Groundwater Plume.

Closure of the OU1 Central Groundwater Plume will be complete when groundwater and VI concerns for each of these sites and throughout the extent of the plume have been addressed.

Individual Site Descriptions

The site history, previous studies, contaminants of concern (COC), and RAs that have occurred to date for the OU1 Central Groundwater Plume sites are discussed in the following sub-sections.

Site 42—Industrial Wastewater Treatment Plant

The IWTP is located near the center of OU1, north of A Street, with a former discharge location south of an unnamed tributary to Sandy Branch. Site 42 specifically consists of the soil and groundwater around the IWTP structure (SWMU C-4). Wastes streams in the Industrial Area Sewer System (Site 47) discharge to the IWTP, which currently discharges treated effluent to the Air Station Sewage Treatment Plant (STP).

Sludge from the IWTP was formerly disposed of by landfilling or lagoon storage (e.g., OU2, Site 10) (Water & Air Research, 1983). The RFA indicated that the IWTP was used to treat wastes from industrial sources such as metal plating, painting, aircraft maintenance, vehicle maintenance, and stormwater from bermed containment areas (A. T. Kearney, 1988). A pump and treat system was installed in 1998 to remediate the OU1 Central Groundwater Plume, and the treatment component of this system was located at the IWTP. As a result of decreasing efficiency and the potential for interference with ongoing attempts to further define the nature and extent of groundwater contamination beneath OU1 by altering local groundwater gradients, the groundwater pump and treat system was shut down in February 2005.

Site History—Operable Unit 1, Site 42

Event	Date
Construction of IWTP	1957
Upgrades to IWTP	1968, 1972, 1992, and 1998
Sludge stockpiled or land-applied	1957 – 1980s*
Wastewater Treatment Facility Assessment	1991
Pump-and-treat system installed	1998
RA Report	1999
Shutdown of pump-and-treat system	2005

*The end date for the sludge stockpiling/land application activities has not been documented. It is estimated that these activities ended in the 1980s, based on documentation of an IWTP upgrade in the early 1990s. It is also documented that sludge was disposed of offsite as early as 1992.

Site 47—Industrial Area Sewer System

Site 47 is a system of underground pipes and aboveground drains that transfer industrial wastewater from various parts of the facility to the IWTP or STP (A. T. Kearney, 1988). Portions of the sewer system were constructed in 1942; the system has been expanded several times to connect facilities that formerly discharged to the sanitary or storm sewer systems. Site 47 only includes the industrial sewers within OU1 that currently discharge to the IWTP. These sewers extend along A Street from Building 130 and Tank Farm A northeast of OU1 to Building 4225 in the southwestern portion of OU1. Industrial processes that currently or historically created wastewater discharge to the sewer system include metal plating, metal finishing, solvent degreasing, paint stripping, painting, fuel storage, fueling, aircraft washing, and general maintenance. Concentrated wastes are no longer discharged to the industrial sewers, but are containerized and transported to the IWTP. Leaks have been detected at several locations within the sewer system in the past. Inspections and repairs are conducted as part of the facility's ongoing maintenance process.

An infiltration and leakage study was conducted at Site 47 in 1993 to identify the sewer segments to be repaired or replaced. Soil and groundwater samples were collected to determine if contamination had leaked from the segments (Halliburton NUS, 1993a). As a result of these studies, certain segments of the sewer system have been repaired.

Site History—Operable Unit 1, Site 47

Event	Date
Construction of the industrial sewer system	1942
Leaks detected in pipes and drains, which carried industrial wastewater, from metal plating, metal finishing, solvent degreasing, paint stripping, painting, fuel storage, fueling, aircraft washing and general maintenance activities	ongoing
Infiltration and Leakage Study	1993

Site 51—Building 137 Former Plating Shop

Site 51 is a former Plating Shop that was located within Building 137 inside FRCE, in the central portion of OU1. The Plating Shop operated from 1942 to 1990, and consisted of an area of approximately 4,000 square feet (ft^2) that included a 3-ft-deep sump for containment of spillage and tank overflows. The area has been cleaned and renovated, and an autoclave has been constructed over a portion of the former plating shop.

The wastes generated in the plating shop consisted of plating solution overflow and rinse water containing zinc and chromium that were discharged to the sump. The sump was constructed of steel and set into the concrete pit, which was covered with wooden grating. Concrete piers were present in the sump so that tanks and equipment could be mounted above the sump. The sump discharged to the industrial sewer system (Site 47) until

1987, when the sump was plugged and the plating shop converted to a closed-loop system. From then until the Plating Shop was moved in 1990, wastes were transported to the IWTP (Site 42) in containers for batch treatment.

Site History—Operable Unit 1, Site 51

Event	Date
Wastes at the site include plating solution overflow and rinse water containing zinc and chromium.	1942–1990
RFI Trip Report	1991
90% Completion Report	1993
RA Report	1996
HRC® Treatability Study Work Plan	2001
HRC® Treatability Study (Injection)	2001
HRC® Treatability Study Technical Memorandum	2004
EHC™ Treatability Study Work Plan	2004
EHC™ Treatability Study (Injection)	2005
EHC™ Treatability Study Report	2007

Site 52—Building 133 Former Plating Shop and Ditch

Site 52 is a former Plating Shop that was located within Building 133 in FRCE, in the central portion of OU1. The Plating Shop operated from 1942 to 1990, and consisted of an area of approximately 2,000 ft^2 that included a 2.5-ft-deep sump for containment of spillage and tank overflows. The wastes generated in the plating shop consisted of plating solution overflow and rinse water that discharged to the sump. The sump was constructed of steel and set into the concrete pit, which was covered with wooden grating. Concrete piers were present in the sump so that tanks and equipment could be mounted above the sump. The sump wastes discharged to a former open stormwater ditch behind Building 133 prior to the installation of the industrial sewer system (Site 47). This former ditch was believed to route stormwater and wastewater to the north of Building 133 and discharge into Sandy Branch Tributary #2. An addition constructed on the southeastern side of the building subsequently covered this ditch. Following the construction of the addition, the sump discharged to the industrial sewer system (Site 47) until 1987, when the sump was plugged and the plating shop converted to a closed-loop system. From then until the plating shop was moved in 1990, wastes were transported to the IWTP (Site 42) in containers for batch treatment. The plating shop area has been cleaned and renovated and is currently used to process and store non-hazardous parts and supplies.

The 1983 IAS identified the drainage ditch along Runway 5 as Site 15, and indicated that it was the ditch described has having received wastewater discharges from Building 133. However, former FRCE employees have indicated that the ditch that received Building 133 wastewater discharges was actually the former ditch that is now covered by an addition to Building 133 and surrounding pavement. The IAS indicated that wastes generated in FRCE were reportedly washed down floor drains in Building 133 that discharged to this drainage ditch; some solid materials were also reportedly dumped along the edge of the ditch. These wastes likely included petroleum, oil, and lubricants (POL), organic solvents, cyanides, and metals.

Site History—Operable Unit 1, Site 52

Event	Date
Approximately 200,000 to 250,000 gallons per day of wastes (POL, organic solvents, cyanides, and metals) generated in FRCE were washed down floor drains that discharged to the drainage ditch	1940s to 1975
Plating solution overflow and rinse water	1942–1990
RFI Trip Report	1991
90% Completion Report	1993

Site History—Operable Unit 1, Site 52

Event	Date
RA Report	1996
EHC™ Treatability Study Work Plan	2004
EHC™ Treatability Study (Injection)	2005
EHC™ Treatability Study Report	2007

Site 92—VOCs in Groundwater near the Stripper Barn

Site 92 is a plume of cVOC-contaminated groundwater near the Stripper Barn portion of Building 137, in the central portion of OU1. The area around the site is covered with buildings and concrete, and portions of the industrial sewer system (Site 47) are located beneath and around the Stripper Barn.

The Stripper Barn is the area where paint is removed from aircraft. In the past, large quantities of solvent were used to remove paint; during the paint removal process, spent solvent flowed into the industrial sewer system. The current paint removal method requires approximately 90 percent less solvent, and spent solvent is captured for proper disposal. Any historical spills that occurred outside the building may have flowed toward storm drains located northeast of the Stripper Barn.

Site History—Operable Unit 1, Site 92

Event	Date
Leaking underground industrial sewer lines	Unknown
RA Report	1999
Long-term Action Plan Pump-and-Treat/IWTP	2002

Site 98—VOCs in Groundwater near Building 4032

Site 98 is a small plume of VOC-contaminated groundwater near Building 4032, located southeast of the IWTP in the central portion of OU1. Site 98 was discovered by MCAS Cherry Point during an investigation of USTs at Building 4032 in 1994, and was identified as a new site for inclusion in the FFA in 1999. The area around the site is paved with some grassy areas.

Site History—Operable Unit 1, Site 98

Event	Date
VOC-contaminated groundwater (source unknown)	Unknown
Site Check	1995
Relative Risk Ranking (RRR)	1995

5.1.1.3. OU1 Sites not Contributing to the Central Groundwater Plume (Sites 16 and 83)

The sites described in the following sub-sections are additional sites within OU1 in the PRAP and ROD phase of CERCLA that are not considered to be contributing to the OU1 Central Groundwater Plume and have been addressed separately. See **Figure 5-2** for site locations.

Site 16—Landfill at Sandy Branch

Site 16 is a former borrow pit area that was subsequently used as a dump site. The site is located along in the western portion of OU1, and is bounded to the north by Sandy Branch, to the west by East Prong Slocum Creek, to the south by a wetland area and unnamed tributary to East Prong Slocum Creek, and to the east by a road off Roosevelt Boulevard. The site is currently used for storage and solid waste handling (i.e., transfer) and to store bulk materials (e.g., rip-rap, gravel, fill dirt, mulch). It is no longer used for solid waste recycling activities. There

are several buildings, a cardboard compactor, and an auto impound lot located on the site. Site 16 was originally identified as being 11 acres, but aerial photographs and site reconnaissance have indicated that the site is larger (approximately 19 acres).

Between 1946 and 1948, up to 20,000 gallons of waste oil, one or more 55-gallon drums of potassium cyanide, and unspecified quantities of other wastes (municipal-type refuse) were reportedly disposed of at Site 16 (Water & Air Research, 1983). Aerial photographs reportedly indicate possible dumping after 1949. Shallow groundwater contamination from VOCs and metals, found during the Technical Direction Memorandum (TDM) Phase I study, was attributed to the landfill and upgradient leaking industrial sewer lines (Halliburton NUS, 1992). The TDM Phase II study was conducted in 1994, and results indicated organic compound contamination in soil. In shallow groundwater, VOC contamination was identified in four areas (Halliburton NUS, 1994a).

In 1996, a pilot-scale AS/SVE system was installed for groundwater remediation (B&R, 1997a). In 1997, a time-critical removal action was conducted that included removal of debris piles containing asbestos, steel storage tanks, and soil contaminated with petroleum hydrocarbons (OHM, 1998a). A full-scale AS/SVE system was installed in 1998 as part of a non-time-critical removal action. The partnering team agreed to shut down the AS/SVE system in February 2005 because it was not achieving the RAOs. In March 2005, the AS/SVE system was shut down and the Site 16 AS/SVE system closeout report was finalized in August 2006 (AGVIQ/CH2M HILL, 2006b). The major equipment components of the AS/SVE system were removed in October 2009, with the wells retained for possible future use. The remainder of the system was decommissioned (including well abandonment) in 2011. Closeout Reports for the AS/SVE system were submitted in February 2010 (Rhēa, 2010d) and May 2011 (Rhēa, 2011c).

During the October 2006 meeting of the MCAS Cherry Point Partnering Team, the results of an analysis performed for Site 16 using the screening level contaminant fate and transport model BIOCHLOR were discussed that indicated that the concentration of TCE at monitoring well 16GW04 may be of concern with respect to the potential for negative impacts from groundwater discharge to the adjacent surface water body (East Prong Slocum Creek). In order to determine if the high concentration of TCE is restricted to the area around 16GW04, and whether or not the concentration is related to onsite sources, the Partnering Team agreed to conduct additional soil and groundwater sampling in the vicinity of 16GW04. The sampling event was conducted in June 2007. The results of the sampling event were included in a technical memorandum that was finalized in May 2008 (CH2M HILL, 2008b), which concluded that no potential sources of the cVOCs in groundwater had been found in soil in the vicinity of monitoring well 16GW04. Beginning in August 2007, the partnering team agreed to sample monitoring well 16GW04 on a quarterly basis to monitor the levels of VOCs in the groundwater in the vicinity of the well. Subsequent to the 2007 Monitoring Well 16GW04 area investigation, the OU1 RI Addendum (CH2M HILL, 2009a) concluded that the cVOC contamination found in 16GW04 and other areas of Site 16 was the result of the downgradient migration of cVOC contamination that is part of the OU1 Central Groundwater Plume. In June 2008, quarterly monitoring of 16GW04 was discontinued at the direction of the partnering team, as the well was to be further sampled as part of additional investigation activities planned for the Central Groundwater Plume.

The partnering team also agreed in 2008 to initiate a FS for Site 16 (as part of a FS for Sites 16 and 83) to address the human health risks from polycyclic aromatic hydrocarbons (PAHs) in surface soil identified in the 2002 OU1 RI (TT, 2002a). During preliminary Site 16 and 83 FS activities, it was determined that additional investigation activities were warranted at Site 83 (see Section 3.1.8), and the partnering team decided to address Site 16 separately. A Site 16 human health risk evaluation for soil was completed in May 2011 to update the human health risk assessment performed as part of the 2002 OU1 RI that included Site 16 as part of a larger soil grouping. The 2011 risk evaluation included the earlier Site 16 soil data from the 2002 OU1 RI along with more recent soil data collected as part of the 2005 BERA. The evaluation concluded that the only scenario with potentially unacceptable risks was the future residential scenario, with arsenic being one of the major drivers of carcinogenic risk. However, arsenic concentrations in soil at Site 16 are consistent with MCAS Cherry Point background concentrations and are attributable to natural conditions. By adjusting the risk calculations to account for the naturally occurring arsenic, the hypothetical carcinogenic risk to a future resident was within the target acceptable risk range. A Supplemental RI Report for Site 16 was prepared in 2012 that included a summary of the

investigation results and human health and ecological risk evaluations performed at Site 16. The Supplemental RI Report concluded that no further action is warranted for Site 16 and recommended that the site proceed to an NFA Proposed Plan and ROD (CH2M HILL, 2012b).

Site History—Operable Unit 1, Site 16

Event	Date
Reported disposal of waste oils (~20,000 gallons), 55-gallon drums of potassium cyanide and municipal-type refuse at the dump area	1946-1948
Phase I/Phase II Technical Direction Memorandum	1992/1994
Installation of pilot AS/SVE system	1996
Debris pile time-critical removal action	1997
Non-time critical removal action	1998
Installation of full-scale AS/SVE system	1998
RA Report	2000
Shutdown of AS/SVE system	2005
Site 16 AS/SVE system shutdown report	2006
Technical Memorandum for the Results of Additional Sampling near Monitoring Well 16GW04	2008
Site 16 AS/SVE System Removal Work Plan	2009
Site 16 AS/SVE System Removal/Closeout Report	2010
Supplemental RI Report	2012

Future Activities

The Draft Proposed Plan for Site 16 was submitted in August 2012 and it is anticipated that the Site 16 Proposed Plan and NFA ROD will be finalized in FY2013.

The cVOCs in groundwater beneath Site 16 are being addressed as part of the OU1 Central Groundwater Plume since the cVOC contamination found beneath the site was the result of the downgradient migration of cVOC contamination that is part of the OU1 Central Groundwater Plume rather than onsite sources.

Site 83—Building 96 Former Pesticide Mixing Area

Site 83 is a former pesticide mixing area, approximately 1 acre in size, located in the southwest portion of OU1, near Site 16. Two former buildings were located at the site, Building 96 (former pesticide shop) and Building 418, with a corrugated metal roof joining the two buildings. A bermed concrete wash rack was located adjacent to Building 418. A drain from the wash rack and a nearby catch basin drain formerly discharged in the area of a steep bank to the west that leads to a wetland located in Site 16 and adjacent to East Prong Slocum Creek. The area around former Building 96 is covered by asphalt/concrete with a grassy area to the west. This area is relatively flat until the edge of the steep slope to the west leading to the wetland. Building 96 was constructed before 1948, and was reportedly used as a pesticide mixing and storage area from 1965 to 1981, when a new pesticide shop (SWMU S-12) was built across Roosevelt Boulevard. Building 96 was subsequently used for equipment storage and administrative space until 1997. The buildings have since been removed, and in early 2006 the concrete foundation and pad of Building 96 were removed during a non-CERCLA demolition project. Geotextile was placed over the former foundation location and covered with gravel.

Site 83 was first identified by MCAS Cherry Point in 1997. A SAR was conducted in 1998 that included the collection of soil, groundwater, and sediment samples. Groundwater and soil contamination was identified and additional investigation of Site 83 was recommended as part of the comprehensive evaluation of OU1 (B&R, 1998).

Soil samples that were collected from the Site 83 area during the 2002 OU1 RI were found to have elevated levels of inorganics, PAHs, and pesticides. In early 2009, the MCAS Cherry Point Partnering Team agreed to conduct additional investigation activities at Site 83 to confirm earlier results and to further delineate the extent of pesticide contamination in soil and groundwater. Following the finalization of an approved SAP for the additional investigation activities, the field investigation was conducted in August 2009. A report of the findings of this investigation was finalized in May 2010 (Rhēa, 2010b). An additional assessment of human health risk based on the findings of the Site 83 supplemental investigation was conducted in 2010, and concluded that for both current and potential future land use, Site 83 does not pose unacceptable health risks to the any of the evaluated receptors. Subsequently, a Supplemental RI Report was prepared that included a summary of the investigation results and human health and ecological risk evaluations performed at Site 83. The Site 83 Supplemental RI Report was finalized in May 2011 (CH2M HILL, 2011b) and concluded that no further action is warranted for Site 83 and recommended that the site proceed to an NFA Proposed Plan and ROD. The NFA Proposed Plan for Site 83 was finalized in March 2012 (Rhēa, 2012) and the Draft NFA ROD was submitted in June 2012.

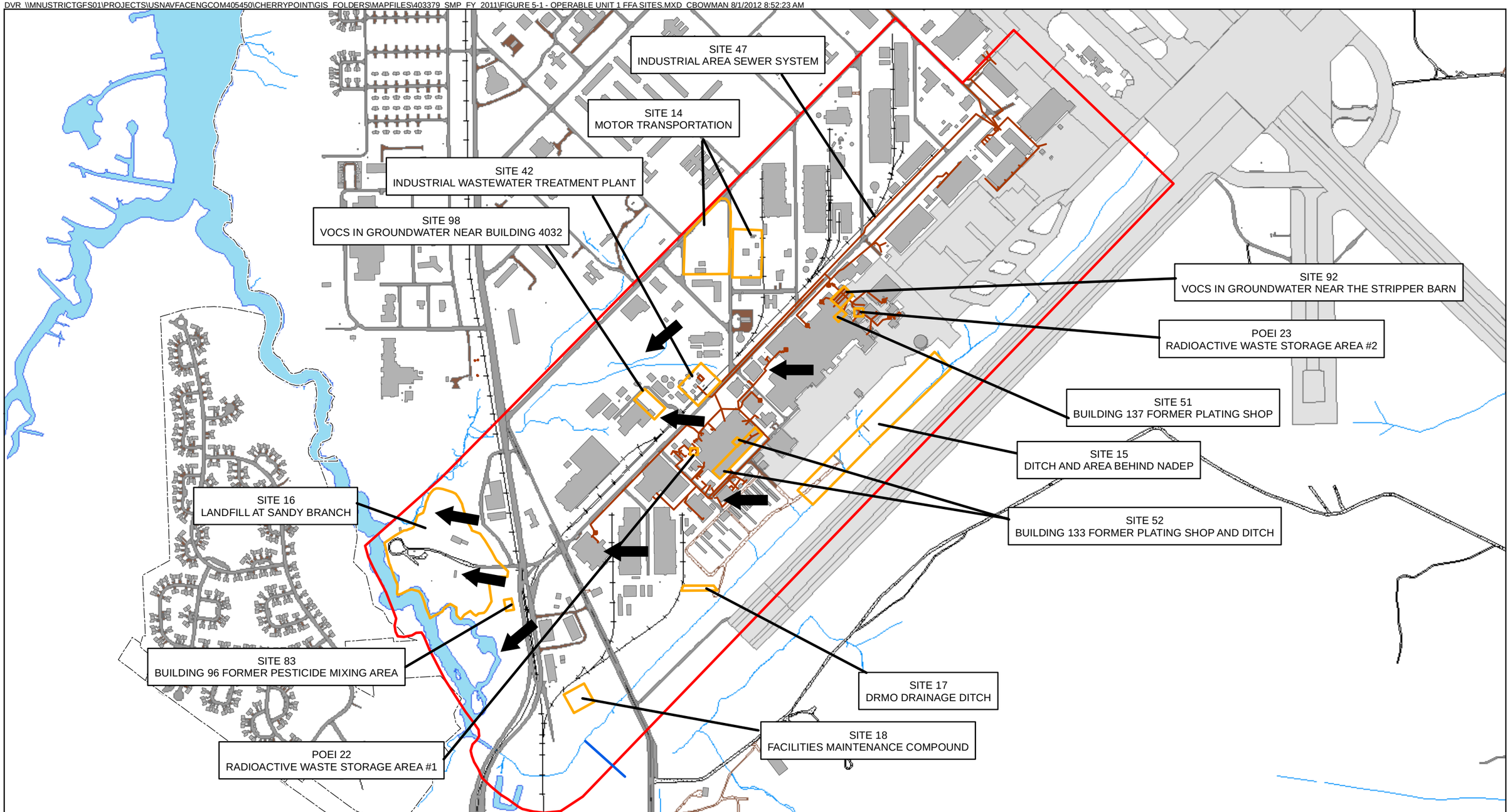
Site History—Operable Unit 1, Site 83

Event	Date
Use as a pesticide mixing area	1965-1981
SAR	1998
Sampling and Analysis Plan – OU1, Site 83 Additional Investigation Activities	2009
Field Investigation	2009
Site Soil Investigation Report	2010
Supplemental RI Report	2011
Proposed Plan	2012
ROD	2012

Future Activities

It is anticipated that the NFA ROD for Site 83 will be signed by the end of FY2012.

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 5-1 - OPERABLE UNIT 1 FFA SITES.MXD CBOWMAN 8/1/2012 8:52:23 AM



Legend

- OU Boundary
- Site Boundary
- Base Boundary
- Buildings
- Road
- Runway
- Railroad
- Surface Water
- Industrial Area Sewer System
- Groundwater Flow Direction

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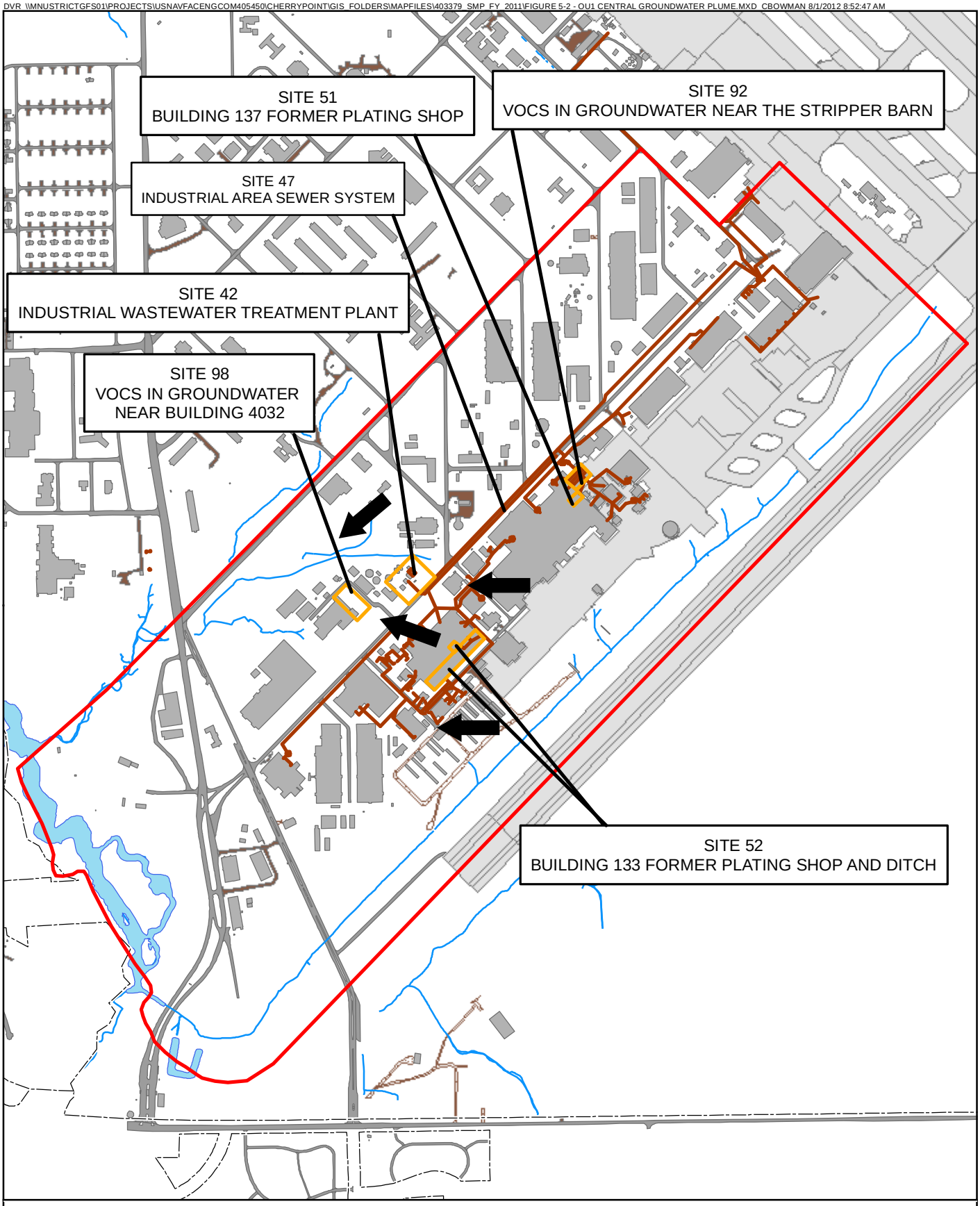
Figure 5-1
Operable Unit 1 FFA Sites
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 5-2 - OU1 CENTRAL GROUNDWATER PLUME.MXD CBOWMAN 8/1/2012 8:52:47 AM



Legend

- OU Boundary
- Site Boundary
- Base Boundary
- Buildings
- Runway
- Road
- Industrial Area Sewer System
- Surface Water
- Groundwater Flow Direction

N
W E
S

0 537.5 1,075
Feet

Figure 5-2
OU1 Central Groundwater Plume FFA Sites
MCAS Cherry Point, North Carolina

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SECTION 6

Descriptions of RD and RA Sites

There are currently no IRP or MRP sites in the RD and RA phase of the CERCLA process.

SECTION 7

Descriptions of RIP and RC Sites

The following subsections discuss the site histories for the 18 IRP sites that are in the RIP and RC phase of the CERCLA process. Remedies are in-place (e.g., MNA and/or LUCs) for 9 of the IRP sites, which constitute all or portions of five OUs (2, 3, 4, 13, and 14). Response is complete with NFA for 9 IRP sites, which form all or portions of five OUs (1, 2, 5, 6, and 15).

7.1 IRP RIP Sites

7.1.1 Operable Unit 2

7.1.1.1. Background

OU2 is located in the west-central portion of MCAS Cherry Point and covers approximately 104 acres. OU2 is bounded by the STP and OU3 to the north, Roosevelt Boulevard to the east, a residential area to the south, and Slocum Creek to the west. There are three FFA sites grouped within OU2 because of their proximity to the Old Sanitary Landfill (Site 10):

- Site 10 – Old Sanitary Landfill
- Site 46 – Polishing Ponds No. 1 and No. 2
- Site 76 – Vehicle Maintenance Area (Hobby Shop)

The location and boundaries of OU2 and the site locations within OU2 are shown on **Figure 7-1**.

The IAS conducted in 1983 identified Site 10. Site 46 (Polishing Ponds No.1 and No. 2) was identified in the RFA conducted in 1988, and the RRR identified Site 76 (Vehicle Maintenance Area [Hobby Shop]) in 1995.

Between 1984 and 1987, an IRI was conducted to identify contaminated sites and included the collection of soil, groundwater, surface water, sediment, and leachate seep samples and aquifer testing at Site 10. Contamination, primarily VOCs, was verified in the shallow groundwater, soil, and sediment. For the RFI conducted between 1989 and 1991, soil, groundwater, surface water, and sediment samples were collected, and a soil-gas survey and aquifer testing were conducted at Site 10 based on data gaps identified from previous investigations (NUS, 1991).

The Phase I TDM conducted in 1992 included magnetometer survey, soil sampling, and the excavation of test pits (Halliburton NUS, 1992). Additional test pits and/or soil borings were recommended to further delineate the horizontal and vertical extent of soil contamination, primarily VOCs and metals, in the area just south of Turkey Gut. During the Phase II TDM, a terrain conductivity survey, additional test pit excavation, and soil sampling were conducted. No further investigation of soils was recommended just south of Turkey Gut based on low concentrations and localized contamination found in soil. Additional soil borings were recommended in the central portion of the landfill to further delineate the horizontal and vertical extent of soil contamination, primarily VOCs and metals (Halliburton NUS, 1994a).

An RI for OU2 was conducted in 1994 and 1995, and included borehole geophysical logging; soil, groundwater, surface water, leachate seep, and sediment sample collection; and surface water level monitoring (B&R, 1997c). The RI concluded that groundwater in the surficial aquifer was contaminated with a wide range of organic contaminants (VOCs, semivolatile organic compounds [SVOCs], and pesticides) and metals. In addition, there were several VOC “hot spot” areas of soil contamination identified. An FS was recommended to evaluate potential RAs.

Remedial alternatives for OU2 were evaluated in the FS (B&R, 1997c), presented in the PRAP (B&R, 1996b), and finalized in the ROD for OU2 (TT, 1999a). The selected remedy included natural attenuation of groundwater, SVE at four Site 10 soil “hot spots,” institutional controls (ICs), and long-term monitoring (LTM) of groundwater, surface water, and sediment to ensure the effectiveness of natural attenuation. Land use controls (LUCs) were established for all or portions of the three sites, which restrict site use to industrial use only, restrict access to certain areas with installed fences and signs, prohibit intrusive activities, and prohibit groundwater use (CH2M HILL, 2002c). The Land Use Control Assurance Plan (LUCAP) elements in place at OU2 are listed in

Table 7-1 and shown on **Figure 7-1**. In 1996, a SVE pilot study was conducted, and in 1997 a full-scale SVE system to treat soil at four Site 10 soil "hot spot" areas was installed. According to the Five-Year Review conducted at MCAS Cherry Point in 2002, the SVE system had been operating as designed since March 1998; VOC mass removal continued to occur at significant rates in Hot Spots 1 and 3, while little to no removal was observed at Hot Spots 2 and 4 (CH2M HILL, 2002c). The Five-Year Review also indicated that soil hot spots existed outside of the area of influence of the system, and recommended that additional investigation activities be conducted and alternate remedial technologies be evaluated. The SVE treatment of the soil hot spots was discontinued in August 2003 because the system was no longer removing significant contaminant mass and was not performing as a cost-effective remedial approach. Quarterly and annual reports of system status and routine monitoring were submitted during the period of operation. A Work Plan was finalized in April 2010 for the removal of the equipment and components of the SVE system (Rhēa, 2010c). The system removal was completed in April 2010 and a Construction Closeout Report was finalized in July 2010 (Rhēa, 2010e).Fish tissue samples were collected from Slocum Creek adjacent to OUs 1, 2, 3, and 4 in 1998, and the results indicated no unacceptable risk to human health from fish tissue ingestion (TT, 1999b). In 1999, surface water and sediment samples were collected adjacent to OUs 1, 2, 3, and 4 as part of a SLERA in Slocum Creek (TT, 2001). No consistent patterns of contamination were observed. The results indicated that ecological risks in Slocum Creek surface water and sediments from organic chemicals were low, while risks from some metals in sediments were higher. However, a decline in metals concentrations over time was noted and it was also suggested that the locations of elevated concentrations of some metals in sediments were correlated with the outfalls of the former MCAS Cherry Point STP as well as the Havelock STP, neither of which are part of any OUs. The SLERA report concluded that further detailed ecological study in Slocum Creek was not necessary.

As discussed below in Section 7.1.1.2, soil sampling conducted at the Site 10 hot spots between 2004 and 2008 revealed that the soil in Hot Spots 1, 3, and 4 were below the applicable screening criteria. However, an area of soil contamination remained at Hot Spot 2 above NC SSLs. A Focused FS that evaluated additional remedial alternatives for soil at Hot Spot 2 and a Proposed Plan were both finalized in 2011. The preferred alternative included the installation of a soil cover over the portion of Hot Spot 2 where soil concentrations exceeded screening criteria. An OU2 ROD Amendment was signed in September 2011 documenting the remedy selection, and the soil cover was installed in early 2012.

Site History—Operable Unit 2

Event	Site	Date
POL, solvents, and sludge disposed of at Old Sanitary Landfill	10	1950s to 1980s
Hydrogeologic and Geotechnical Analysis	OU2	1981
IAS	OU2	1983
RFA	10, 46	1988
IRI	OU2	1988
Groundwater Assessment	OU2	1988
Evaluation of Sludge Impoundment Area	OU2	1991
RFI	OU2	1991
Phase I TDM	OU2	1992
Phase II TDE	OU2	1994
PRAP	OU2	1996
RI	OU2	1997
FS	OU2	1997
SAP	OU2	1997
Basis of Design Report for SVE System	10	1997
SVE Work Plan	10	1997
O&M Plan for SVE	10	1998
ROD	OU2	1999

Event	Site	Date
LTM RA Plan	OU2	1999
RA Report	OU2	1999
RD Work Plan for Baseline LTM	OU2	1999
Slocum Creek Fish Ingestion Report	OU2	1999
LUCAP	OU2	2003
Operation and Maintenance (O&M) Status Report	OU2	2000, 2001
RD/RA Report	OU2	2001
Slocum Creek SLERA	OU2	2001
RA Report	OU2	2002
Long-term RA Report	OU2	2002
LTM Work Plan	OU2	2002
LTM Annual Report	OU2	2003
Site 10 SVE System shut down	10	2003
Technical Memorandum, January 2004 SVE Hot Spot Area sampling	10	2004
2003 LTM Report	OU2	2005
Technical Memorandum, April 2005 SVE Hot Spot Area sampling	10	2005
2004 LTM Report	OU2	2005
Technical Memorandum, January 2006 SVE Hot Spot Area sampling	10	2006
2005 LTM Report	OU2	2006
Technical Memorandum, November 2006 re: Site 10 Hot Spot 2 Soil Delineation	10	2007
2006 LTM Report	OU2	2007
2007 LTM Report	OU2	2008
2008 LTM Report	OU2	2009
2009 LTM Report	OU2	2010
Site 10 SVE System Decommission Work Plan	10	2010
LTM Evaluation	OU2	2011
2010 LTM Report	OU2	2011
2011 LTM Report	OU2	2011
OU2 ROD Amendment	10 – Hot Spot 2	2011
LTM SAP	OU2	2012

Future Activities

Annual LTM of groundwater began in October 2002. In 2007, LTM sampling at OU2 was changed from an annual to a quarterly basis. LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD (CH2M HILL, 2002b).

An effort to evaluate and optimize the OU2 LTM program based on the findings to date was completed in May 2011. The LTM Evaluation recommended changes to the OU2 LTM program for groundwater and surface water monitoring for team consideration. A new LTM SAP documenting the changes to the OU2 LTM program was finalized in May 2012 (CH2M HILL, 2012g), and the new OU2 LTM program began in late FY2012. A summary of the wells sampled at OU2 as part of the ongoing LTM program is included in **Table 7-2**.

LUCs remain in place across the area of OU2, as documented in **Table 7-1** and shown on **Figure 7-1**.

7.1.1.2. Site 10—Old Sanitary Landfill

Site 10, the Old Sanitary Landfill, is approximately 40 acres and is located west of Roosevelt Boulevard, south of the STP (Site 43), 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 that was used to store petroleum products. The former drum storage area is currently used to store miscellaneous equipment, and is fenced and covered with gravel.

Site 10 served as the primary landfill at MCAS Cherry Point beginning in 1955. Before the late 1970s, all landfilling activities were carried out south of Turkey Gut. Subsequently, landfilling operations also occurred north of Turkey Gut. Landfill operations ceased at Site 10 in the early to mid-1980s. Industrial wastes reportedly disposed of in the landfill included POLs, solvents, and sludge. The quantity of wastes is unknown, but is estimated to be thousands of tons. Hazardous liquids and POLs were also spread on the landfill surface and burned, deposited in unlined pits on the south side of Turkey Gut, and buried at the landfill.

After the OU2 SVE system was shut down in 2003, periodic (roughly annual) soil sampling commenced at Site 10, Hot Spots 1, 2, 3, and 4. Soil sampling occurred in January 2004, April 2005, January 2006, and November 2006. The January 2004 sampling results indicated that soil VOC concentrations at Hot Spots 1 and 4 were below the screening criteria and these hot spots were removed from further annual sampling. The April 2005 sampling results indicated that VOCs in soils at Hot Spot 3 were below the screening criteria, and this hot spot was also removed from the annual sampling. The January 2006 sampling results defined specific VOCs that exceeded the screening criteria at Hot Spot 2, and further sample analyses at Hot Spot 2 were restricted to these analytes. The November 2006 Hot Spot 2 sampling results indicated several VOCs that exceeded screening criteria. Based on these results, the MCAS Cherry Point ER Program Partnering Team agreed to conduct additional soil sampling in order to further delineate the soil contamination within Hot Spot 2. Samples were collected in July and December 2007. These samples did not successfully delineate the contamination, and additional samples were collected in 2008 to complete Hot Spot 2 investigation activities.

Since OU2 has a ROD in place, a Focused FS (FFS) that evaluated additional remedial alternatives for soil at Site 10, Hot Spot 2 was finalized in February 2011 (Rhēa, 2011a). The Proposed Plan for Site 10, Hot Spot 2 was finalized in April 2011 (Rhēa, 2011b). The preferred alternative presented in the Proposed Plan included the installation of a soil cover over areas of Hot Spot 2 where soil concentrations exceeded NC SSLs to prevent direct exposure and limit infiltration and migration of soil/waste contamination to groundwater. The preferred alternative also included groundwater monitoring to ensure protection of Slocum Creek from groundwater discharge to surface water. The OU2 ROD Amendment was signed in September 2011 (Rhēa, 2011d). LUCs established under the 1999 ROD for OU2, which restrict site use to industrial use only, restrict access to certain areas with installed fences and signs, prohibit intrusive activities, and prohibit groundwater use, apply to the entire area of Site 10 and were not changed by the 2011 Amended ROD.

In preparation for the implementation of the soil cover remedy at Hot Spot 2, a Remedial Design/Remedial Action Work Plan was prepared and finalized in December 2011 (Rhēa, 2011e). The soil cover was successfully installed at Site 10, Hot Spot 2, in January and February 2012.

Site History—Site 10, Hot Spot 2

Event	Date
Focused FS	2010
Site 10 SVE System Construction Closeout Report	2010
Proposed Plan	2011
Amended ROD	2011
RD/RA Work Plan	2011
Soil Cover Installation	2012

Future Activities

The IRACR documenting the soil cover remedy for Site 10, Hot Spot 2 will be finalized in early FY2013. LUCs that include all of Site 10 remain in place. LTM activities at OU2 will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD (CH2M HILL, 2002b).

7.1.1.3. Site 76—Vehicle Maintenance Area (Hobby Shop)

Site 76 is a fenced area located south of Site 10, and consists of a garage building and parking lot where personal vehicles are repaired. The area covers approximately 250 ft by 250 ft, and is bounded to the west by a wooded area adjacent to Slocum Creek, a residential area to the east, Site 10 to the north, and a wooded area to the south. Site 76 is the only site at OU2 that is currently active. Ongoing site activities include general auto maintenance and auto body repair. Based on a review of historical aerial photographs, the Site 76 area was developed between 1958 and 1964.

LUCs established under the 1999 ROD for OU2, which restrict site use to industrial use only, restrict access to certain areas with installed fences and signs, prohibit intrusive activities, and prohibit groundwater use, apply to the entire area of Site 76 with the exception of the area restricted with fences and signs.

Site History—Operable Unit 2, Site 76

Event	Date
General Auto Maintenance	1960s to present
RRR	1995

Future Activities

LUCs that include the area of Site 76 remain in place. LTM activities at OU2 will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD (CH2M HILL, 2002b).

7.1.2 Operable Unit 3

7.1.2.1. Background

OU3 is located in the west-central portion of MCAS Cherry Point and covers approximately 19 acres. OU3 is bounded by Slocum Road to the north, the STP and OU2 to the south, Slocum Creek to the west, and an adjacent wooded area to the east. OU3 consists of two FFA sites (Site 6 – Fly Ash Ponds and Site 7 – Old Incinerator and Adjacent Area) that were grouped into one OU because of their proximity and common waste types. The location and boundaries of OU3 and the site locations within OU3 are shown on **Figure 7-2**.

Sites 6 and 7 were identified in the IAS conducted in 1983. Between 1984 and 1987, an IRI was conducted that included groundwater sampling at Site 6. In 1991 and 1993, soil, groundwater, surface water, and sediment samples were collected at Sites 6 and 7 as part of the 21-Unit RFI. During 1992, soil and groundwater samples were collected as part of the 10-Unit TDM. Recommendations included additional soil sampling to evaluate the presence or absence of combustion byproducts such as PAHs; groundwater, surface water, and sediment sampling; and evaluation of the interaction between groundwater, surface water, and sediment and the lime/alum ponds (Halliburton NUS, 1993b).

An RI was conducted from 1994 to 1996, and included the collection of soil, groundwater, surface water, and sediment samples; borehole geophysical logging; and surface water level monitoring. Analytical results for Site 6 indicated that this area has been relatively unaffected by fly ash disposal activities or incineration/burning at Site 7; however, minimal residual material remained onsite. The COCs at OU3, as documented in the IROD signed in 1996 (B&R, 1996f), are PAHs and metals in soil, and benzene, bis(2-ethylhexyl)phthalate, 2-methylnaphthalene, and metals in groundwater (CH2M HILL, 1996).

Fish tissue samples were collected from Slocum Creek adjacent to OUs 1, 2, 3, and 4 in 1998; the results indicated no unacceptable risk to human health from fish tissue ingestion (TT, 1999b). In 1999, surface water and sediment

samples were collected adjacent to OUs 1, 2, 3, and 4 as part of a SLERA in Slocum Creek (TT, 2001). No consistent patterns of contamination were observed. The results indicated that ecological risks in Slocum Creek surface water and sediments from organic chemicals were low, while risks from some metals in sediments were higher. However, a decline in metals concentrations over time was noted and it was also suggested that the locations of elevated concentrations of some metals in sediments were correlated with the outfalls of the former MCAS Cherry Point STP as well as the Havelock STP, neither of which are part of any OUs. The SLERA report concluded that further detailed ecological study in Slocum Creek was not necessary. Remedial alternatives for OU3 were evaluated in the FS (B&R, 1996d), presented in the PRAP (B&R, 1996b), and finalized in the ROD for OU3 (TT, 2000). The selected site-wide RA for OU3 was monitored natural attenuation (MNA) and ICs for groundwater, and air sparge and ICs for soil (OHM, 1998b). The boundaries of the various LUCs in place at OU3 are listed in **Table 7-1**. A final IRACR was submitted in September 2007 and documented the attainment of the soil remedial goals.

Annual LTM of groundwater began in October 2002. In 2007, the LTM sampling frequency at OU3 was increased to a quarterly basis and in 2010 the sampling frequency was reduced to every third quarter (9 months). In 2011, LTM sampling was discontinued when the constituents detected in groundwater no longer exceeded the performance standards identified in the ROD for four consecutive sampling events (CH2M HILL, 2002a). The final RACR was submitted in April 2012 (CH2M HILL, 2012c) and documented that the RA for OU3 has met the RAOs stated in the ROD.

Site History—Operable Unit 3

Event	Date
IAS	1983
RFA	1988
IRI	1988
21-Unit RFI	1993
10-Unit TDM	1993
PRAP	1996
RI	1996
FS	1996
IROD	1996
RA Report	1998
SAP	1999
RD Work Plan for Baseline LTM	1999
Slocum Creel Fish Ingestion Report	1999
O&M Plan	2000
LTM RA Plan	2000
RA Report	2000
ROD	2000
LUCAP	2003
O&M Status Report	2001
RD/RA Report	2001
Slocum Creek (SLERA)	2001
LTM Work Plan	2002
LTM Report	2003
LTM Annual Report	2003
LTM Quarterly Sampling Tech Memo	2004
2003 LTM Report	2005
2004 LTM Report	2005

Event	Date
2005 LTM Report	2006
2006 LTM Report	2007
IRACR	2007
2007 LTM Report	2008
2008 LTM Report	2009
2009 LTM Report	2010
2010 LTM Report	2011
RACR	2012

Future Activities

The LUCs at OU3 will continue to be in effect and will remain unchanged as part of the long-term management of OU3.

7.1.2.2. Site 6—Fly Ash Ponds

Site 6 formerly consisted of three unlined ponds bounded by Slocum Creek to the west, Luke Rowe's Gut to the south, and Slocum Creek Road to the north and east. The ponds covered approximately 2.5 acres and were approximately 10 to 15 ft deep. The ground surface west of the former pond locations slopes steeply to approximately 5 ft amsl, giving way to a flat and heavily vegetated area adjacent to Slocum Creek. There are wetland areas adjacent to Slocum Creek and Luke Rowe's Gut, and a portion of the site lies within the 100-year floodplain of Slocum Creek. Fly ash and cinders from the old power plant were disposed of in the ponds from the 1940s until about 1970. The ponds were then reportedly used for the disposal of lime/alum sludge from the potable water treatment plant from December 1980 until the new water treatment plant became operational in mid-1994. It was also reported that up to 5,000 gallons of waste POLs were disposed of in the ponds (Water & Air Research, 1983). A review of historical aerial photographs indicated that the ponds were not constructed until the late 1950s. Earlier aerial photographs indicate the presence of a natural pond and/or shallow depressions. The third pond appeared in an aerial photograph from 1978 (B&R, 1996e).

In 1996, as part of the closure of the Air Station water treatment plant, the ponds at Site 6 were removed. This non-Environmental Restoration, Navy (ER,N) funded effort was accomplished by solidifying and excavating the pond sludge, removing piping and debris, leveling the berms, and re-vegetating the site. The site was revegetated with pine seedlings in 1996 by MCAS Cherry Point personnel as part of a "Longleaf Pine Initiative" to return the land to its natural state (OHM, 1998b). LTM began in October 2002 and was discontinued in 2011 when it was confirmed that the constituents detected in groundwater no longer exceeded the performance standards defined in the OU3 ROD.

Site History—Operable Unit 3, Site 6

Event	Date
Disposal of fly ash and cinders	1940s to 1970
Solidification and excavation of pond sludge, removal of piping and debris, berm leveling	1996
Re-vegetation of site	1996

Future Activities

The LUCs at Site 6 will continue to be in effect and will remain unchanged as part of the long-term management of OU3.

7.1.2.3. Site 7—Old Incinerator and Adjacent Area

Site 7 formerly consisted of an incinerator and open burning ground that covered approximately 5 acres. It is bounded by the STP to the south and east, Luke Rowe's Gut to the north, and Slocum Creek to the west. The

former incinerator was reportedly located adjacent to Luke Rowe's Gut in the eastern part of the site. The open burning area was reportedly south of Luke Rowe's Gut near its confluence with Slocum Creek.

From the 1940s until approximately 1955, waste POLs, FRCE wastes, and other wastes (including municipal refuse) were burned in the incinerator or on the adjacent open burning grounds. Fly ash disposal and open burning were suspected in the western portion of Site 7. The fly ash is believed to have originated from the incinerator, and was reportedly mixed with other wastes. Fly ash was also found in the eastern portion of the site in some places. Aerial photographs indicate that the incinerator was removed between 1981 and 1984.

As part of the selected remedy at Site 7, a fence and warning signs were installed, and soil samples were collected (OHM, 1998b). In 2000, an air sparge system was installed for enhanced bioremediation of a localized area of soil contamination. According to the 2002 Five-year Review, the AS system at Site 7 was in operation 90 percent of the time and was generally functioning as designed. Based on the February 2001 soil sampling results, it was noted that the extent of benzene contamination in soil at Site 7 extended beyond the radius of influence of the current AS system to the southwest and northeast (OHM, 2000). As a result, additional AS points were installed to address the extended area of contamination. Based on soil and groundwater monitoring results indicating that the AS system had effectively remediated the soil hot spot, the AS system was shut down in mid-2003 (CH2M HILL, 2003a). The MCAS Cherry Point Partnering Team agreed in October 2006 to remove the components of the AS system at Site 7, as it was not anticipated that any future use would be required. The AS system was removed in May 2007.

LTM began in October 2002 and was discontinued in 2011 when it was confirmed that the constituents detected in groundwater no longer exceeded the performance standards defined in the OU3 ROD.

Site History—Operable Unit 3, Site 7

Event	Date
Waste POLs, FRCE wastes and municipal wastes burned in incinerator and in open burning grounds	1940s to 1953
Work Plan for AS System	1999
AS System Installation	2000
LTM RA Report—AS	2002
RA Report	2002
Annual Report	2003
Shutdown of AS System	2003
Removal/Demolition of AS System	2007
Site 7 AS System Removal After Action Report	2007

Future Activities

The LUCs at Site 7 will continue to be in effect and will remain unchanged as part of the long-term management of OU3.

7.1.3 Operable Unit 4

7.1.3.1. Site 4 – Borrow Pit/Landfill

OU4 consists of one FFA site, Site 4, and is located in the northwest–central portion of MCAS Cherry Point and covers approximately 130 acres. Site 4 is a Borrow Pit/Landfill North of Runway 14, and is bounded by Mill Creek to the south and west, Access Road to the north, and Duffy Road to the east. The location and boundaries of OU4 are shown on **Figure 7-3**.

Site 4 consists of several borrow pits that were used for waste disposal, as well as a fenced and lined drum storage area that is located in the north-central portion of the site. Site 4 was identified in the IAS and RFA, which indicated that the borrow pits were initially excavated in the 1940s. The borrow pits had been excavated to a depth below the water table, and a drain was reportedly cut to Slocum Creek. The disposal of construction and

demolition debris and asbestos waste began in the 1950s. Other wastes, including wastes from FRCE, may have also been disposed of at Site 4; however, no records were maintained on the types or amounts of wastes. The date that disposal activities ceased at the site is not known (Water & Air Research, 1983). The majority of historical activities at Site 4 took place in the western portion of the site, where the borrow pits used for waste disposal were located. The area was permitted in 1997 as an active land clearing and inert debris landfill, and is currently used for recycling of unpainted/untreated wood, yard waste, and inert construction debris. The drum storage area, located in the northeastern corner of OU4, was visible in the 1988 aerial photograph. The area is now used for the storage of new material for FRCE.

Sampling was conducted between 1984 and 1987 as part of an IRI. During the 21-Unit RFI, VOCs were found in groundwater. A 10-Unit TDM was conducted in 1992. Elevated lead concentrations were found during the RI in Mill Creek sediments in the eastern part of Site 4. Subsequent investigation revealed that the lead concentrations increased upstream from OU4, and were greatest near an inactive skeet and trap range located to the northeast. It was concluded that the lead in Mill Creek sediments did not originate from site activities at OU4, but from the skeet and trap range. Because the lead originated from military munitions at an operational military range, it was determined that the lead was not a RCRA solid waste or the result of a release regulated under CERCLA. The range is being addressed by the MCAS Cherry Point EAD, and an investigation of lead contamination on the inactive range has been performed. Therefore, USEPA and NCDENR agreed to remove the lead from consideration as a COC in the OU4 remedy selection process.

Fish tissue samples were collected from Slocum Creek adjacent to OUs 1, 2, 3, and 4 in 1998 and the results indicated no unacceptable risk to human health from fish tissue ingestion (TT, 1999b). In 1999, surface water and sediment samples were collected adjacent to OUs 1, 2, 3, and 4 as part of a SLERA in Slocum Creek (TT, 2001). No consistent patterns of contamination were observed. The results indicated that ecological risks in Slocum Creek surface water and sediments from organic chemicals were low, while risks from some metals in sediments were higher. However, a decline in metals concentrations over time was noted and it was also suggested that the locations of elevated concentrations of some metals in sediments were correlated with the outfalls of the former MCAS Cherry Point STP as well as the Havelock STP, neither of which are part of any OUs. The SLERA report concluded that further detailed ecological study in Slocum Creek was not necessary.

The Navy and MCAS Cherry Point initiated VGM in October 2003 to monitor VOC and SVOC concentrations that were found to exceed State groundwater quality standards during the RI. VGM was conducted on a semiannual basis in 2004 and 2005, and continued beginning in 2006 as LTM as part of the selected remedy in the OU4 ROD. In 2007, the LTM sampling frequency changed to a quarterly basis. In 2012, the sampling frequency was returned to semiannual.

The Final FFS for OU4 was submitted in May 2004. The OU4 PRAP was finalized in April 2005, followed by the Final OU4 ROD, which was signed in September 2005. The OU4 ROD identified two COCs: 1,1,2,2-tetrachloroethane and benzene (CH2M HILL, 2006a). The Selected Remedy includes MNA and LUCs for groundwater. The LUCs limit exposure to groundwater by prohibiting the use of surficial aquifer groundwater, except for monitoring. The RD was finalized in April 2006. The LUC elements implemented at OU4 are listed in **Table 7-1** and are shown in **Figure 7-3**. A summary of the wells that are sampled at OU4 as part of the LTM program is included in **Table 7-2**.

An IRACR for OU4 was signed in October 2006, which signified that the LUCS are in place and have been recorded in the appropriate documents. The RA includes both LUCs and MNA of groundwater for wells that have shown concentrations of COCs above North Carolina Groundwater Quality Standards (NC2L).

To address persistent benzene concentrations detected above North Carolina Groundwater Quality Standards in the monitoring well that is sampled as part of LTM activities at OU4, the Navy conducted additional investigation activities in the vicinity of this monitoring well to delineate the extent of benzene in groundwater and to collect some soil samples. A SAP for this investigation was finalized in June 2010 (Rhēa, 2010f) and the investigation activities were conducted in three phases between July 2010 and March 2011. Benzene was detected in groundwater above the NC 2L during all three events, but was not detected in any of the soil samples. The results of the investigation were reported in a Technical Memorandum submitted in September 2011 (Rhēa, 2011f) that

recommended investigating the feasibility of insitu groundwater treatment via sulfate injection to accelerate the anaerobic degradation of benzene. Additional soil and groundwater samples were collected from the site in November 2011 for use in a bench-scale treatability study to evaluate the injection substrate Electron Acceptor Solution (EAS™) as a means to stimulate anaerobic biodegradation of dissolved-phase benzene at OU4. Target iron and sulfate reducing bacteria that are necessary for a successful bench-scale treatability study were not detected in groundwater or soil samples. During the January 2012 partnering peeting, the partnering team decided to discontinue the bench-scale study and continue with the original MNA remedy, given that the maximum benzene concentrations were relatively low and the plume did not appear to be migrating based on the LTM data. The team also decided to add a newly-installed monitoring well, 4GW10, to the current LTM well network and to reduce the sampling frequency from quarterly to semi-annually.

Site History—Operable Unit 4, Site 4

Event	Date
Disposal of demolition and asbestos wastes	1950s, 1982 to mid-1990s
Permitted landfill, used for recycling of untreated wood, yard waste and inert construction waste	1997 to present
IAS	1983
RFA	1988
IRI	1988
21-unit RFI	1993
10-unit TDM	1993
Slocum Creek Fish Ingestion Report	1999
RI/FS Work Plan	1999
Slocum Creek SLERA	2001
RI	2002
VGM	2003 to 2005
FS	2004
PRAP	2005
ROD	2005
RD	2006
LTM Sampling	2006 to present
May 2006 LTM Report	2006
IRACR	2006
Annual 2006 LTM Report	2007
Annual 2007 LTM Report	2008
Annual 2008 LTM Report	2009
2009 LTM Report	2010
Sampling and Analysis Plan, Additional Investigation Activities	2010
2010 LTM Report	2011
Additional Investigation Activities Technical Memorandum	2011
2011 LTM Report	2012

Future Activities

The LUC elements implemented at OU4 (**Table 7-1**) remain in place and are shown in **Figure 7-3**.

Ongoing LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards defined in the OU4 ROD. A summary of the wells that are sampled at OU4 as part of the LTM program is included in **Table 7-2**.

7.1.4 Operable Unit 13

7.1.4.1. Background

OU13 is located in the southeastern portion of MCAS Cherry Point near Runway 32, and covers approximately 61 acres. Several sites were grouped within OU13 because of their proximity to each other. There are two FFA sites (Sites 19 and 21) within the boundaries of OU13. OU13 also includes releases to groundwater from Site 44B, which was a former sludge application area. OU13 is not currently used for any active purpose other than providing a buffer of cleared land adjacent to Runway 32. The location and boundaries of OU13 and the site locations within OU13 are shown on **Figure 7-4**.

Sites 19 and 21 were identified in the IAS and RFA, and Site 44B was identified in the 21-Unit RFI. Between 1985 and 1987, groundwater samples were collected at Sites 19 and 21 as part of an IRI to identify contaminated sites. In November 1991, additional groundwater samples were collected at OU13 as part of the 21-unit RFI to support a Corrective Measures Study and to verify releases from various sites. During the RI field activities for OU13 conducted in 1994 and 1999, soil, groundwater, surface water, sediment, and fish tissue samples were collected. An FS was recommended to evaluate remedial alternatives associated with potential unacceptable risks to human health based on concentrations of VOCs, pesticides, and/or inorganic constituents that exceeded screening criteria in groundwater and surface water (TT, 2002a).

The Navy and MCAS Cherry Point initiated VGM in October 2003 to monitor VOC concentrations that were found to exceed State groundwater quality standards during the RI. VGM was conducted on a semiannual basis until 2006, when it was supplanted by the LTM program for OU13 specified in the ROD. In 2007, the LTM sampling frequency was increased to quarterly.

The OU13 FFS was submitted in July 2004. The OU13 PRAP was finalized in April 2005, followed by the OU13 ROD, which was signed in September 2005. The COCs identified for OU13 included 1,1-dichloroethene, methylene chloride, vinyl chloride, and bis(2-ethylhexyl)phthalate (CH2M HILL, 2005a). The selected remedy includes MNA for groundwater and LUCs, which will limit exposure to groundwater and will prohibit the use of groundwater except for monitoring. The Final RD was submitted in April 2006. The LUC elements implemented at OU13 are listed in **Table 7-1** and are shown in **Figure 7-4**. A summary of the wells sampled at OU13 as part of the LTM program is included in **Table 7-2**.

An IRACR for OU13 was prepared to document the completion of the RA and the RIP. Specifically, the RA chosen included both ICs, in the form of LUCs, and MNA of groundwater for wells that have shown concentrations of COCs above NC2L standards. The IRACR was finalized in September 2006.

Site History—Operable Unit 13

Event	Date
21-unit RFI	1993
RI/FS Work Plan	1999
RI	2002
VGM	2003 to 2005
FFS	2004
PRAP	2005
ROD	2005
RD	2006
May and November 2005 VGM Report	2006
RD	2006
IRACR	2006
LTM Sampling	2006 to present
May 2006 LTM Report	2006
2006 LTM Report	2007

Event	Date
2007 LTM Report	2008
2008 LTM Report	2009
2009 LTM Report	2010
2010 LTM Report	2011
2011 LTM Report	2012

Future Activities

The LUC elements implemented at OU13 (**Table 7-1**) remain in place and are shown in **Figure 7-4**.

Ongoing LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards defined in the OU13 ROD. A summary of the wells that are sampled at OU13 as part of the LTM program is included in **Table 7-2**.

7.1.4.2. Site 19—Borrow Pit/Landfill (North of Runway 32)

Site 19 consists of an area of approximately 16 acres that includes several former borrow pits that were reportedly used for waste disposal. Site 19 is located on the northern side of Runway 32, with Hancock Creek and the tributary Shop Branch to the north and east. There are wetland areas adjacent to Hancock Creek and Shop Branch.

Parts of Site 19 were first disturbed in 1949 and used through the early 1960s. Fly ash from the steam plant, wastes from FRCE, and asbestos-lined piping may have been disposed of in the borrow pits (Water & Air Research, 1983). No records were kept detailing quantities or specific types of wastes.

Site History—Operable Unit 13, Site 19

Event	Date
Several borrow pits used for waste disposal (fly ash from steam plant, wastes from FRCE, asbestos-lined piping)	1949 to early 1960s
IAS	1983
RFA	1988
IRI	1988

Future Activities

LUCs at Site 19 will continue to be in effect and will remain unchanged as part of the long-term management of OU13. LTM activities at OU13 will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD.

7.1.4.3. Site 21—Borrow Pit/Landfill (South of Runway 32)

Site 21 consists of an area of approximately 36 acres that includes several borrow pits that were reportedly used for waste disposal. Site 21 is located south of Runway 32, and Shop Branch runs through Site 21 before crossing under the runway.

Parts of the area were first disturbed in 1949 and used through the early 1960s. Fly ash from the steam plant, wastes from FRCE, and asbestos-lined piping may have been disposed of in the borrow pits (Water & Air Research, 1983). No records were kept detailing quantities or specific types of wastes.

Site History—Operable Unit 13, Site 21

Event	Date
Several borrow pits used for waste disposal (fly ash from steam plant, wastes from FRCE, asbestos-lined piping)	1949 to early 1960s
IAS	1983
RFA	1988
IRI	1988
10-unit TDM	1993

Future Activities

LUCs at Site 21 will continue to be in effect and will remain unchanged as part of the long-term management of OU13. LTM activities at OU13 will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD.

7.1.4.4. Site 44B—Former Sludge Application Area

Site 44B consists of a relatively flat 11-acre area adjacent to Site 21 where sludge from the STP was applied. The area was reportedly a landfill in the 1950s and 1960s, and the waste reportedly included asbestos pipe. Between September and November 1987, liquid sludge from the STP digesters was reportedly land-applied at Site 44B. The sludge may have contained organic compounds and other constituents that were not digested during the sewage treatment process.

Site History—Operable Unit 13, Site 44B

Event	Date
Sludge and asbestos pipes disposed of in landfill	1950s and 1960s

Future Activities

LUCs at Site 44B will continue to be in effect and will remain unchanged as part of the long-term management of OU13. LTM activities at OU13 will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD.

7.1.5 Operable Unit 14

7.1.5.1. Site 90—Building 130 VOC-Contaminated Groundwater

OU14 consists of one FFA site, Site 90, and consists of a plume of groundwater contaminated with cVOCs that was first identified near Building 130, which is used as a hangar. It is located in the west-central portion of the MCAS Cherry Point flightline complex, and consists of a broad expanse of concrete tarmac, buildings, taxiways, and some grassy areas adjacent to Runway 14L. The location and boundaries of OU14, Site 90, are shown on **Figure 7-5**.

Prior to the RI completed in 2008 (CH2M HILL, 2008c), there had been no ER Program investigations or remedial activities specific to Site 90; however, numerous groundwater samples were collected as part of investigations of the abandoned aviation fuel pipelines in the Building 130 area. All releases from pipelines and associated USTs and above-ground storage tanks are managed by and under investigation by the MCAS Cherry Point UST Program.

In July 1994, soil and groundwater samples were collected in the Site 90 area to support a Base Realignment and Closure (BRAC) project. The purpose of the investigation was to identify contamination that may require cleanup before the demolition of existing structures and site preparation required for construction of facilities in support of anticipated base realignment; Building 130 was designated as BRAC Site 7. The study indicated that VOCs, SVOCs, pesticides, metals, and low levels of total petroleum hydrocarbons (TPH) were present in soil and groundwater near Building 130. No significant risks were identified; however, the report stated that remediation was needed for soils impacted with TPH above State criteria (Halliburton NUS, 1994b).

Between January and March 1995, soil and groundwater samples were collected as part of a Site Assessment. The focus of the study was the abandoned underground aviation fuel line system. The results indicated TPH contamination in soil and a broader distribution of contamination types in groundwater. The data appeared to indicate that multiple releases of jet and gasoline-grade fuels had occurred at several different locations over time in the area. The presence of free product petroleum was also observed beneath the western end of Building 130 (Law Engineering, 1995).

In June 1995, soil and groundwater samples were collected and aquifer testing was performed as part of a Site Assessment addendum. The study was conducted to further evaluate the extent of petroleum free-product accumulation, the extent of soil and groundwater contamination, and to assess the potential for human exposure to subsurface contaminants. TPH and VOC contamination in the soil was found. The groundwater data suggested that while most of the contamination was located along the abandoned fuel piping along Sixth Avenue, multiple releases of jet and gasoline-grade fuels had occurred at several different locations over time in the area. Further investigation of the extent of dissolved-phase groundwater contamination upgradient and downgradient of Building 130 was recommended.

In 2000, groundwater samples were collected at Site 90 as part of the OU1 RI, and petroleum-related compounds and cVOCs were detected in groundwater (TT, 2002b). Based on these groundwater results, it was decided that Site 90 be addressed separately from OU1 as part of a new Operable Unit, OU14, and an RI for OU14, Site 90 was initiated in 2001 with the preparation and regulatory approval of the RI Work Plan. Phase I fieldwork for the RI was completed in October 2002, and included groundwater and soil sampling. The Phase I results, and the results of independent groundwater sampling for cVOCs conducted by the UST Program, indicated that the cVOC plume in the Hangar 130 area extended further downgradient than previously thought. Consequently, a Phase I RI Interim Report was prepared that recommended that a Phase II investigation be performed to determine the full extent of the cVOC plume in the surficial aquifer (CH2M HILL, 2003e). The Phase II RI investigation consisted of the sampling of approximately 60 monitoring wells along the flightline area extending from Site 90 to the northwest, and was performed in October 2003. Based on the results of the Phase II investigation findings, a Phase III investigation was recommended. The Phase III investigation was conducted in April 2005, which included monitoring well installation and additional sampling. The Final Phase II Interim Report was submitted in June 2005.

During initial examination of the Phase III RI results, it was determined that data gaps still existed with regard to potential surface water and sediment contamination in the drainage ditch to the northwest of OU14. Based on the data gaps, a SLERA was conducted for OU14 (Site 90) as part of the ongoing Phase III RI. Because the area that includes Site 90 is industrialized and is comprised of paved surfaces (e.g., runways, taxiways, aircraft parking areas) and buildings, there was no habitat or ecological resources present within the site boundaries that were addressed as part of the SLERA. Instead, aquatic receptors in a downgradient stream (water column biota and benthic macroinvertebrates) were evaluated for potential risk from exposure to cVOC-contaminated groundwater originating from Site 90 that could possibly discharge to surface water and sediment of the stream. This perennial stream, which is an unnamed tributary of Mill Creek, is approximately 1,400 ft long and 1,000 ft northwest of Site 90. Surface water and sediment samples were collected in April 2006, and the SLERA was performed in June 2006 in accordance with *NCDENR Guidelines for Performing Screening Level Ecological Risk Assessments within the North Carolina Division of Waste Management* (NCDENR, 2003), as well as applicable USEPA and Navy guidance (USEPA, 1997; CNO, 2003; NAVFAC, 2004). The SLERA concluded that contaminated groundwater is not contributing significant levels of contaminants of potential ecological concern (COPECs) to the downgradient aquatic habitat and no further ecological investigation is warranted for OU14.

The Final OU14 RI Report was submitted in December 2008, and includes the results of the human health and ecological risk assessments. Based on an evaluation of the data collected during all phases of the RI, including historical data, cVOC contamination is limited to surficial aquifer groundwater, while petroleum UST-related contamination is prevalent throughout the site in soil and surficial aquifer groundwater.

The Baseline Human Health Risk Assessment (HHRA) results showed no risks above acceptable ranges from exposure to surface water, sediment, or groundwater from the Yorktown Aquifer. With respect to surficial aquifer groundwater, the HHRA results indicated potentially unacceptable risks for hypothetical future potable water use by an adult resident (iron), future child resident (benzene, arsenic, iron, and manganese), and lifetime resident (vinyl chloride and arsenic). No risks or hazards above acceptable ranges were identified for the construction worker, current/future industrial worker, or an adult/ adolescent trespasser/visitor.

The results of the vapor intrusion screening showed no indication of the need to mitigate vapor issues under current industrial exposures, based on a comparison of estimated indoor air concentrations to occupational exposure limits. The evaluation showed a potential risk (potential carcinogenic risk greater than 1×10^{-6}) from inhalation of estimated vapor concentrations of 1,2-dichloroethane (DCA), benzene, TCE, and VC vapors by the current/future industrial worker (onsite workers) and the future resident. However, only estimated benzene vapor concentrations exceeded the upper limit of the acceptable carcinogenic risk range of 1×10^{-4} and non-carcinogenic hazard index (HI) of 1. Not considering vapor concentrations of chemicals currently used at Site 90 and its vicinity, estimated potential benzene and vinyl chloride vapor concentrations resulting from groundwater contamination are expected to exceed North Carolina's Ambient Air Quality Limits (North Carolina Administrative Code [NCAC] Title 15A, Subchapter 2D; NC2D) for annual exposure to carcinogens in all scenarios. However, because of the nature of screening vapor evaluations, the exceedances were qualified as potentially overstated. No COPCs exceeded the occupational exposure limits—that is, no immediate action is needed for current OU14 site workers or for future workers at any location under current occupational exposure conditions.

Based on the results documented in the RI report, it was recommended that an FS be completed to evaluate remedial alternatives to address potential human health risks (calculated in HHRA and exceedances of NC2L Groundwater Standards) related to cVOCs in the surficial aquifer groundwater. Remedial alternatives for petroleum contamination are under the purview of the UST Program. The OU14 FS report was submitted and finalized in 2009 (CH2M HILL, 2009c).

The vapor intrusion screening indicated a need for further evaluation of the vapor intrusion pathway to refine the understanding of the potential pathway for future onsite industrial workers and future residents if new buildings or structures are to be built. Therefore, indoor air vapor issues will be evaluated in the future, if necessary, prior to construction of new buildings. Remedial alternatives for groundwater would indirectly address vapor issues.

The Proposed Plan for OU14 was completed in April 2009 (CH2M HILL, 2009d); the selected remedy was MNA for groundwater and LUCs to address groundwater and potential vapor intrusion issues. The public meeting to present the OU14 Proposed Plan was held in May 2009 and the public review and comment period extended into June 2009. The Final ROD for OU14 was submitted in August 2009 (CH2M HILL, 2009e) and was signed on September 28, 2009.

The RD for the LUC portion of the selected remedy was finalized in March 2010 (CH2M HILL, 2010a). This RD defines the LUC boundaries for OU14 and describes how LUCs will be implemented and enforced. The LUC elements implemented at OU14, Site 90, are listed in **Table 7-1** and are shown in **Figure 7-5**.

The MNA portion of the remedy was implemented in stages, commencing with a baseline round of groundwater monitoring to establish initial groundwater conditions at the time of remedy implementation and to provide additional data to allow the optimal placement of additional monitoring wells to complete the network for LTM going forward. The SAP for the baseline round of LTM was finalized in September 2010 (CH2M HILL, 2010e) and the sampling activities were completed in June 2010. Following the evaluation of the data from this sampling event, additional LTM monitoring well locations were recommended and an LTM SAP for OU14 was finalized in June 2011 (CH2M HILL, 2011f). The LTM program at OU14 consists of annual groundwater sampling from 73 surficial aquifer monitoring wells to evaluate the progress of the MNA groundwater remedy (**Table 7-2**). The first annual round of LTM groundwater sampling was conducted in June 2011. The Long-term Monitoring Report presenting the first round of LTM results was finalized in May 2012 (CH2M HILL, 2012h).

An IRACR for OU14 was prepared to document the implementation of the RA (LUCs and MNA of groundwater) and the establishment of RIP. The IRACR was finalized in June 2011 (CH2M HILL, 2011e).

Site History—Operable Unit 14, Site 90

Event	Date
VOC-contaminated groundwater	unknown
Site Characterization and Evaluation Report for BRAC	1994
Site Assessment Report	1995
Site Assessment Addendum	1996
RI Work Plan	2002
Phase I RI Interim Report	2003
Phase II RI Interim Report	2005
RI	2008
FS	2009
Proposed Plan	2009
ROD	2009
RD for LUCs	2010
SAP for Baseline Round of LTM	2010
LTM SAP	2011
IRACR	2011
2011 LTM Report	2012

Future Activities

The LUC elements implemented at OU14 (**Table 7-1**) remain in place and are shown in **Figure 7-5**. In particular, indoor air/vapor intrusion issues will be evaluated, if necessary, should new buildings be constructed within the designated area of this LUC.

Ongoing LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards defined in the OU14 ROD. A summary of the wells that are sampled at OU14 as part of the LTM program is included in **Table 7-2**.

7.2 IRP RC Sites

7.2.1 OU1 NFA Sites (Sites 14, 15, 17, and 18)

A complete description of OU1, a listing of its 12 associated FFA sites, and the environmental history of OU1 as a whole is presented in Section 5.1.1. The sites described in the following subsections are the remaining 4 FFA sites within OU1 for which the MCAS Cherry Point Partnering Team agreed that no further investigation activities were required. All 4 of these sites were addressed in an NFA Proposed Plan (Rhēa, 2010a) and an NFA ROD (CH2M HILL, 2010c) that was signed in September 2010.

7.2.1.1. Site 14—Motor Transportation

Site 14 is located in the central portion of OU1 at the intersection of C Street and Second Avenue (**Figure 5-1**), and is bisected by Curtis Road. Site 14 is approximately 9 acres and is flat and covered with asphalt and gravel. The area and buildings are used for parking lots, wash racks, and vehicle maintenance. The unpaved area adjacent to Building 157 is used for heavy equipment storage and the paved area adjacent to Building 160 is used to store motor pool vehicles.

According to an employee, waste oil was applied to the unpaved parking lots for dust control in the 1950s and 1960s. In 1977, a spill of approximately 2,000 gallons of aviation fuel, most likely JP-5, occurred at Building 160. In April 1994, as part of a SWMU Assessment Report (SAR), MCAS Cherry Point collected soil samples for oil and grease analysis in response to the previously unreported release of waste oil to the unpaved parking lots (USMC, 1994). Two additional soil samples were collected in 1997 and analyzed for organic compounds (except

pesticides/polychlorinated biphenyls [PCBs]) and metals. The SAR recommended surfactant placement on the ground surface.

The results of the 2002 OU1 RI activities included the detection of lead in soil at concentrations above background, which may have been the result of the application of waste oil on the site for dust control or related to the UST sites (Tank Farm C) within the Site 14 boundary. Lead was found in groundwater; however, it was likely the result of leaking gasoline storage tanks and not the result of lead leaching from the soil.

A site closure request letter, dated October 4, 2002, was sent to NCDENR, which stated that the CERCLA program would address cVOC compounds at Tank Farm C. The MCAS Cherry Point Partnering Team agreed in December 2006 that the area within the boundary of Site 14 had been closed under the UST program. Additionally, it was agreed that the cVOC groundwater contamination below the area of a former UST program remediation system, south of the ER Program Site 14 boundary and outside the Tank Farm C boundary, would be addressed under CERCLA.

In 2007, the MCAS Cherry Point Partnering Team agreed that no further investigation activities were required for Site 14. Site 14 was addressed in an NFA Proposed Plan (Rhēa, 2010a) and NFA ROD (CH2M HILL, 2010c) that included Sites 14, 15, 17, 18 and 40. The NFA ROD for these sites was signed in September 2010.

Site History—Operable Unit 1, Site 14

Event	Date
Application of waste oil to unpaved parking lots	1950s and 1960s
Spill of ~2,000 gallons of aviation fuel (most likely JP-5) at Building 160	1977
Removal of fuel and contaminated soil	1977
SAR	1994
Proposed Plan for Sites 14, 15, 17, 18, and 40	2010
NFA ROD for Sites 14, 15, 17, 18, and 40	2010

7.2.1.2. Site 15—Ditch and Area Behind FRCE (Formerly NADEP)

Site 15 is located along the southeastern edge of OU1 and was described in the IAS as an unpaved 25-acre area between FRCE and a drainage ditch adjacent to Runway 5 (**Figure 5-1**).

In 2008, the MCAS Cherry Point Partnering Team agreed that no further investigation activities were required for Site 15. Site 15 was addressed in an NFA Proposed Plan (Rhēa, 2010a) and NFA ROD (CH2M HILL, 2010c) that included Sites 14, 15, 17, 18 and 40. The NFA ROD for these sites was signed in September 2010.

Site History—Operable Unit 1, Site 15

Event	Date
VSI	1983
Proposed Plan for Sites 14, 15, 17, 18, and 40	2010
NFA ROD for Sites 14, 15, 17, 18, and 40	2010

7.2.1.3. Site 17—DRMO Drainage Ditch

Site 17 is a drainage ditch, approximately 300 ft long, located in the southeastern portion of OU1, next to the DRMO (**Figure 5-1**). The ditch discharges to the storm sewer drainage system. Water flows to the east toward the Runway 5 Ditch then southwest to Schoolhouse Branch and ultimately into East Prong Slocum Creek. The adjacent 1-acre area was historically used for material storage that included dichlorodiphenyltrichloroethane (DDT), spent photographic fluid after silver recovery, and PCB-containing transformers. POL was reportedly used for dust control in the storage yard.

It was reported that transformers were infrequently drained into the ditch from 1961 to 1968 (Water & Air Research, 1983). A removal action was conducted in 1995 to remove PCB-contaminated soil and sediment.

Confirmation samples collected during the removal action indicated that the PCB-contaminated soil had been excavated. However, the 2002 OU1 RI indicated the possibility that PCB-contaminated soil above the 10 milligrams per kilogram (mg/kg) action level still existed at Site 17 (TT, 2002b).

Additional investigation activities were conducted in August 2008 to either confirm that concentrations of PCBs and the pesticide dieldrin are below regulatory screening criteria or indicate that the earlier removal action was inadequate and additional remedial action is warranted. The results indicated that PCB concentrations in soil were below the 10 mg/kg action level. For dieldrin, soil concentrations were below earlier results from the same locations, but 4 out of 6 samples exceeded the North Carolina Soil Screening Level (NC SSL) of 1.13 µg/kg. In groundwater, 4 of 10 temporary well samples contained Arochlor-1260 in excess of the Federal Maximum Contaminant Level (MCL) of 0.5 µg/L and 2 of 6 samples contained dieldrin in excess of the NC2L of 0.0022 µg/L. It was concluded that the dieldrin in soil and groundwater was the result of basewide pesticide applications rather than a site-specific release. With regard to PCBs, a new, permanent monitoring well was installed at Site 17 in April 2009, and a groundwater sample was collected in May 2009 and analyzed for PCBs. No PCBs were detected in the sample, and the MCAS Cherry Point Partnering Team agreed at the May 2009 partnering meeting that no further action was necessary at Site 17. Site 17 was addressed in an NFA Proposed Plan (Rhēa, 2010a) and NFA ROD (CH2M HILL, 2010c) that included Sites 14, 15, 17, 18 and 40. The NFA ROD for these sites was signed in September 2010.

Site History—Operable Unit 1, Site 17

Event	Date
300-ft drainage ditch located adjacent to a 1-acre storage area adjacent where DDT, photographic fluid (after silver recovery), and transformers containing PCBs were stored. Transformers were drained into the ditch, and PCB spills occurred at the site when transformers were drained. POL was reportedly used for dust control at the site.	1961 to 1968
Removal Action	1995
Supplemental Investigation Field Activities	2008
Supplemental Investigation Report	2009
Proposed Plan for Sites 14, 15, 17, 18, and 40	2010
NFA ROD for Sites 14, 15, 17, 18, and 40	2010

7.2.1.4. Site 18—Facilities Maintenance Compound

Site 18 is a fenced outdoor storage area approximately 0.5-acre in size located in the southwest corner of OU1 (**Figure 5-1**). The site is bounded by Schoolhouse Branch to the south, a railroad track to the west and north, and Cunningham Boulevard to the east. The area was historically used for transformer storage. Minor occasional leaks of PCB-laden fluid had been reported, but no specific quantities were documented (Water & Air Research, 1983). Transformers were stored on a bermed concreted pad. During the field investigation for the Remedial Investigation Interim Report (NUS, 1988), no PCBs were detected in the soils. No further action was recommended at Site 18 (NUS, 1988).

In 2007, the MCAS Cherry Point Partnering Team agreed that no further investigation activities were required for Site 18. Site 18 was addressed in an NFA Proposed Plan (Rhēa, 2010a) and NFA ROD (CH2M HILL, 2010c) that included Sites 14, 15, 17, 18 and 40. The NFA ROD for these sites was signed in September 2010. A small area of chlorinated VOC groundwater contamination north of Site 18 is not related to the site, and is being addressed as part of the OU1 Central Groundwater Plume.

Site History—Operable Unit 1, Site 18

Event	Date
Transformer storage area—occasional leaks of PCB-laden fluid at the site	Not specified
Proposed Plan for Sites 14, 15, 17, 18, and 40	2010
NFA ROD for Sites 14, 15, 17, 18, and 40	2010

7.2.2 OU2 Site 46—Polishing Ponds No.1 and No. 2

A complete description of OU2 is presented in Section 7.1.1. OU2 Site 46 is located to the north of Site 10, and consists of two inactive, unlined ponds (**Figure 7-1**). The ponds are approximately 12 ft deep and formerly served as wastewater aeration basins for the STP from 1942 until 1996. The treated wastewater was discharged to Slocum Creek via a National Pollution Discharge Elimination System (NPDES)-permitted outfall. The STP was upgraded and no longer requires the use of the ponds for aeration. The ponds have been retained for potential stormwater management in the future, and concurrence will be obtained from the USEPA and NCDENR before use of these inactive ponds. MCAS Cherry Point submitted a Closure Plan for this site to the State of North Carolina in December 1988. USEPA Region 4, which formerly had primacy, agreed to waive the closure requirements, allowing the ponds to be addressed under the NCDENR RCRA authority.

Due to the previous RCRA activities and its proximity to other sites, Site 46 was incorporated into the ER Program LUCs for OU2. In December 2006, the Cherry Point Partnering Team agreed that there was no CERCLA contamination related to Site 46 and that the polishing pond footprints could be removed from the LUC boundaries for OU2. The LUC related to prohibition of groundwater use was retained for the small land area in between the polishing ponds and Slocum Creek (see **Figure 7-1**), as documented in a letter from NAVFAC Mid-Atlantic to EPA dated May 19, 2008.

Site History—Operable Unit 2, Site 46

Event	Date
Wastewater aeration basins	1942-1996
Removal of polishing ponds from OU2 LUC boundaries; retention of the small area in between the polishing ponds and Slocum Creek within the LUC boundaries for the prohibition of groundwater use	2008

7.2.3 Operable Unit 5

7.2.3.1. Background

OU5 is located in the northeastern portion of MCAS Cherry Point. OU5 consists of two FFA sites, 1 and 2, that were grouped into one operable unit because of their proximity, history, and common waste types. Site 19 (Borrow Pit/Landfill North of Runway 32) was formerly part of OU5, but was transferred to OU13 because the site is closer to the other OU13 sites. The location and boundaries of OU5 are shown on **Figure 7-6**.

Sites 1 and 2 were identified in the IAS and RFA. Between 1985 and 1987, groundwater samples were collected at Site 1 as part of an IRI to identify contaminated sites. The IRI concluded that groundwater had not been affected by historical waste practices at Sites 1 and 2, and that no further investigation was recommended (NUS, 1988). A 21 Unit RFI was conducted in 1991 that included groundwater sampling. No releases to groundwater were confirmed; however, seepage was observed, and as a result, it was not possible to conclude that there had not been any releases from the borrow pits. Therefore, additional groundwater monitoring and sampling of surface water and sediment surrounding the sites were recommended (Halliburton NUS, 1993a).

During the OU5 RI investigation, soil, groundwater, surface water, and sediment samples were collected. The RI results did not indicate any significant risks to human health or the environment; however, VOC concentrations slightly exceeded State groundwater standards in several monitoring wells. The RI was finalized in August 2005.

The Navy and MCAS Cherry Point initiated VGM in October 2003 at OU5 to monitor VOC concentrations found to exceed State groundwater quality standards during the RI field investigation. VGM was conducted on a semiannual basis into 2006, when the LTM program that is part of the remedy specified in the OU5 ROD replaced it. In 2007, the sampling frequency for LTM changed to a quarterly basis.

The Final RI for OU5 was submitted in August 2005. The FFS was finalized in October 2005. The Final OU5 PRAP was submitted in November 2005. The OU5 ROD was finalized in May 2006 and signed July 21, 2006. It was determined that NFA was necessary at Site 1; therefore, the ROD only addresses an RA at Site 2. Three COCs were identified at OU5 in a single monitoring well: TCE, vinyl chloride, and benzene (CH2M HILL, 2006b). The Selected Remedy for Site 2 included MNA for groundwater and LUCs to limit exposure to and prohibit the use of surficial

aquifer groundwater, except for monitoring. Upon finalization of the ROD, the RD for OU5 was completed in October 2006 and outlined the implementation of MNA and LUCs at Site 2. An IRACR for OU5 was signed in September 2008, which documented that the LUCS were in place and were recorded in the appropriate documents.

LTM was discontinued in 2011 after all COC concentrations in four consecutive rounds of sampling were below their respective performance standards. As a result, all RAOs for OU5 had been achieved. A RACR establishing RC for OU5 was finalized in January 2012 (CH2M HILL, 2012a) and site closure activities have been initiated, to include well abandonment and the removal of established LUCs.

Site History—Operable Unit 5

Event	Date
IAS	1983
RFA	1988
IRI	1988
21-unit RFI	1993
Work Plan	2002
VGM	2003 to 2006
RI	2005
FFS	2005
PRAP	2005
ROD	2006
LTM	2006 to present
RD	2007
2006 LTM Report	2007
2007 LTM Report	2008
IRACR	2008
2008 LTM Report	2009
2009 LTM Report	2010
2010 LTM Report	2011
RACR	2012

7.2.3.2. Site 1—Borrow Pit/Landfill

Site 1 is located west of an unpaved access road in the northeastern portion of MCAS Cherry Point. It is a former borrow pit area that was later used for waste disposal. The total disturbed area of Site 1 was estimated to be approximately 4 acres. The northern boundary of Site 1 is approximately 100 ft south of Reed's Gut, and the other boundaries include an unnamed tributary to the west, a line 200 ft north of an unpaved road to the south, and the unpaved access road to the east.

The area was originally used as a borrow pit area, but was later used as a disposal site. Site use reportedly began in the mid- to late-1950s, and continued for an unknown period of time. No records were kept detailing the quantities or types of wastes that were disposed of at the site. Some chemical waste, crushed 55-gallon drums, and construction and demolition debris were reported to have been disposed of at the site, but only small amounts of rubble and trash were seen onsite during the IAS (Water & Air Research, 1983).

Site History—Operable Unit 5, Site 1

Event	Date
Former borrow pit and disposal area	Late 1950s to unknown

7.2.3.3. Site 2—Borrow Pit/Landfill

Site 2 is located east of an unpaved access road in the northeastern portion of MCAS Cherry Point, directly opposite Site 1. Like Site 1, it is a former borrow pit area that was later used for waste disposal. The total disturbed area of Site 2 was estimated to be approximately 6 acres. Site 2 is bounded on the east and northeast by an unnamed tributary to Reed's Gut, an unpaved road to the south and southwest, and the unpaved access road to the west.

The area was originally used as a borrow pit area, but was later used as a disposal site. Site use reportedly began in the mid- to late 1950s, and continued for an unknown period of time. No records were kept detailing the quantities or types of wastes that were disposed of at the site. Some chemical waste, crushed 55-gallon drums, and construction and demolition debris were reported to have been disposed of at the site, but only small amounts of rubble and trash were seen onsite during the IAS (Water & Air Research, 1983).

Site History—Operable Unit 5, Site 2

Event	Date
Former borrow pit and disposal area	Late 1950s to unknown

7.2.4 Operable Unit 6

7.2.4.1. Site 12—Crash Crew Training Area

OU6 includes one FFA site, Site 12, the Crash Crew Training Area, and consists of the eastern portion of Runway 28, an east–west trending runway along the eastern edge of MCAS Cherry Point. A second site, Site 35, was initially included in OU6 because of its proximity to Site 12. However, Site 35 was identified as a RCRA SWMU and therefore was remediated under the provisions of RCRA. The boundaries and location of OU6 are shown on **Figure 7-7**. Site 12 is located along the south–central portion of Runway 28. The runway is bordered by grassy areas to the north, south, and east, with dense woods beyond the extent of the grass. Hancock Creek is located approximately 700 ft east of the eastern end of Runway 28.

The Crash Crew Burn Pit is a circular concrete pad currently used to burn waste JP-5 to train crash crews to extinguish fires. The concrete burn pit was reportedly constructed in 1985, and is approximately 100 ft in diameter with a 5-inch-high curb around the circumference (Halliburton NUS, 1993a). The burn pit itself is drained through subsurface piping to a nearby oil–water separator, as is a circular trench drain that rings the outside of the burn pit to capture fire water not contained within the burn pit. After training exercises or a heavy rainfall, facilities maintenance personnel pump all liquids from the oil–water separator and transport them to the IWTP.

Site 12 was identified in the IAS and RFA, which indicated that Site 12 had been used for crash crew training activities since the mid-1960s. According to the IAS, waste POLs and waste burnable (i.e., likely non-chlorinated) solvents were formerly burned in one of two circular bermed areas on Runway 28, but that only contaminated fuel was burned at the time the report was written. The IAS also indicated that spills and leaks from the burn pits were evident at the time of the report, and that stained and oily soil was present in the drainage swale south of Runway 28. Between 1985 and 1990, effluent from the oil–water separator was discharged through a NPDES-permitted outfall to the nearby drainage swale (Halliburton NUS, 1993a). Around 1990, the effluent pipe of the separator was welded shut.

Sampling was conducted during a 21-Unit RFI in 1991. TPH contamination was detected in the soil and sediment samples, and additional sampling of all media was recommended (Halliburton NUS, 1993a). Additional samples were collected in 1993 as part of the 10-unit TDM. TPH contamination was found to be limited in area and depth; however, further investigation of inorganic constituents in soil and groundwater was recommended at Site 12 (Halliburton NUS, 1993b).

During a 1999 site visit, some clarification was obtained regarding the nature of the burn pits that pre-dated the current concrete burn pit constructed in 1985. According to interviewed crash crew personnel, the former burn pits were constructed of dirt placed on top of the asphalt runway surface and shaped into circular berms. The

crash crew personnel recalled the existence of two dirt burn pits of this type, and indicated that fuels (including gas and diesel) and magnesium aircraft parts were formerly burned in the pits. A review of historic aerial photographs revealed five separate locations where earthen burn pits had once been located since the early 1960s, with either two or three of the burn pits being present at any one time.

The Final RI conducted for OU6 concluded that, based on the limited number of constituents that pose potential human health risk only within an unrealistic exposure pathway, an FS did not appear to be warranted for OU6, and NFA was recommended (CH2M HILL, 2005c). However, regulator concerns regarding the extent of sampling beneath historic burn pit locations were expressed, and a Supplemental Site Investigation (SSI) was initiated in October 2003. The investigation included additional soil and groundwater sampling beneath the former burn pit locations. The final SSI was submitted in May 2005.

The Final RI was submitted in August 2005 and concluded that an FS addressing all exceedances of North Carolina standards was not warranted at OU6. No definitive connection was drawn between Site 12 activities and the constituents identified during the RI, except at former Burn Pit E. Based on infrequent detections of constituents exceeding North Carolina standards, the minimal extent of groundwater contamination, and the lack of human health or ecological risk for realistic exposure pathways, it was recommended that a FFS be prepared for Site 12, addressing only the delineated areas of arsenic, benzene, naphthalene and 2-methylnaphthalene contamination in subsurface soil and groundwater beneath the former location of Burn Pit E. The final FFS was submitted in January 2006.

The PRAP for OU6 was submitted for public review and comment in May 2006. The Remedial Alternative selected in the PRAP was excavation and offsite disposal of contaminated soil, along with MNA and LUCs for groundwater. The ROD was signed September 28, 2006. The draft RD was submitted on February 20, 2007.

In February 2007, the RA Work Plan (AGVIQ/CH2M HILL, 2007b) was submitted and the removal of contaminated soils at OU6 began in March 2007 and was completed in May 2007. The Draft IRACR was submitted in July 2007, but finalization of the document was suspended after successful completion of the remediation and the likely closure of OU6 was found to be imminent in early 2008. The RA completed at Site 12 is discussed in Section 4.3.

The Navy and MCAS Cherry Point initiated VGM at OU6 in May 2005 to monitor VOC concentrations found to exceed State groundwater quality standards identified in the FS. VGM was conducted on a semiannual basis until 2007, when the OU6 LTM program established in the ROD replaced it.

In late 2008, LTM activities were terminated at OU6, as all organic compound COCs were found during four or more consecutive quarterly sampling events to either be no longer detected or at concentrations below the performance standards specified in the OU6 ROD. In addition, the recurring elevated arsenic concentrations in a single monitoring well were found to be the result of a damaged well screen; upon retrofit of the monitoring well, the arsenic concentrations were found to be below regulatory screening criteria in multiple sampling events. A RACR establishing RC for OU6 was finalized in August 2008.

Site History—Operable Unit 6

Event	Date
Crash Crew Training activities—burning of waste POLs, solvents and contaminated fuels	mid-1960s to unknown
IAS	1983
RFA	1988
21-unit RFI	1993
10-unit TDM	1993
Work Plan	1999
Supplemental Investigation Plan	2003
SSI	2005
RI	2005
VGM	2005 to 2006

Site History—Operable Unit 6

Event	Date
FFS	2006
PRAP	2006
ROD	2006
RD	2007
RA Work Plan	2007
Completed Removal Action	2007
LTM Sampling	2007 to 2008
2007 LTM Report	2008

Site History—Operable Unit 6

Event	Date
RACR	2008
2008 LTM Report	2009

7.2.5 Operable Unit 15

7.2.5.1. Site 82—Slocum Creek in the Vicinity of OU2 and OU3

OU15 is defined as Site 82 – Slocum Creek in the vicinity of OU2 and OU3, which is located in the west-central portion of the Air Station. OU15 extends across Slocum Creek from the southern boundary of OU2 to the northern boundary of OU3 and covers an area of approximately 60 acres (**Figure 7-8**). Slocum Creek is a public trust, tidally influenced, tributary of the Neuse River, which in turn flows into Pamlico Sound. It is approximately 6 miles in length from the mouth of Slocum Creek at the Neuse River to the headwaters of its two main branches, Southwest Prong and East Prong. It is fed by several tributaries, including Tucker Creek, Mill Creek, and several smaller feeder creeks.

As part of discussions between the regulatory agencies and the MCAS Cherry Point Partnering Team, it was decided that Slocum Creek would be separated from the individual adjacent OUs. This decision allowed remedial actions to be implemented at OU2 and OU3 while additional investigations and risk assessments were conducted for the adjacent section of Slocum Creek (OU15). The additional studies were conducted to determine potential risks to human health and the environment from any past contaminant migration from OU2 or OU3 into Slocum Creek.

During historical investigations at OU2 and OU3, there were constituents that exceeded State water quality standards in samples collected from Slocum Creek. Chemicals were also detected in sediment at concentrations above ecological screening values. For some chemicals, the standards and screening values were exceeded in samples upstream of OU2 and OU3. Therefore, it was concluded that OU2 and OU3 were not the source (or only source) of these chemicals.

Fish tissue samples were collected from Slocum Creek adjacent to OUs 1, 2, 3, and 4 in 1998 and the results indicated no unacceptable risk to human health from fish tissue ingestion (TT, 1999b). In 1999, surface water and sediment samples were collected adjacent to OUs 1, 2, 3, and 4 as part of a SLERA in Slocum Creek (TT, 2001). No consistent patterns of contamination were observed. The results suggested a low risk potential, except for metals in sediment at localized areas. A Final PRAP was submitted for OU15 in October 2002, and an NFA ROD was signed in June 2003.

Site History—Operable Unit 15, Site 82

Event	Date
PRAP	2002
ROD	2003

TABLE 7-1
Summary of LUCAP Boundaries
FY 2013 Site Management Plan
MCAS Cherry Point, North Carolina

Operable Unit	Sites	LUCAP Controls	Estimated Area (Acres)	Date Implemented
2	10, 46, 76	Industrial Use Only	95	September 29, 1999
		Restricted Access - Fencing/Signs Required	86	
		Intrusive Activities Prohibited	95	
		Aquifer Use Prohibited	100	
3	6, 7	Industrial Use Only	13	October 24, 2000
		No Use Authorized (Site 7 only)	6	
		Restricted Access - Fencing/Signs Required	7	
		Intrusive Activities Prohibited	6	
		Aquifer Use Prohibited	19	
4	4	Intrusive Activities Prohibited - Groundwater	110	May 31, 2007
		Aquifer Use Prohibited	110	
13	19, 21, 44b	Intrusive Activities Prohibited - Groundwater	58	May 31, 2007
		Aquifer Use Prohibited	58	
14	90	Aquifer Use Prohibited	96	March 17, 2010
		Intrusive Activities Prohibited - Groundwater/Vapor Intrusion evaluation required for building construction or modification	60	

TABLE 7-2
Summary of Samples Collected as part of the LTM Program
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

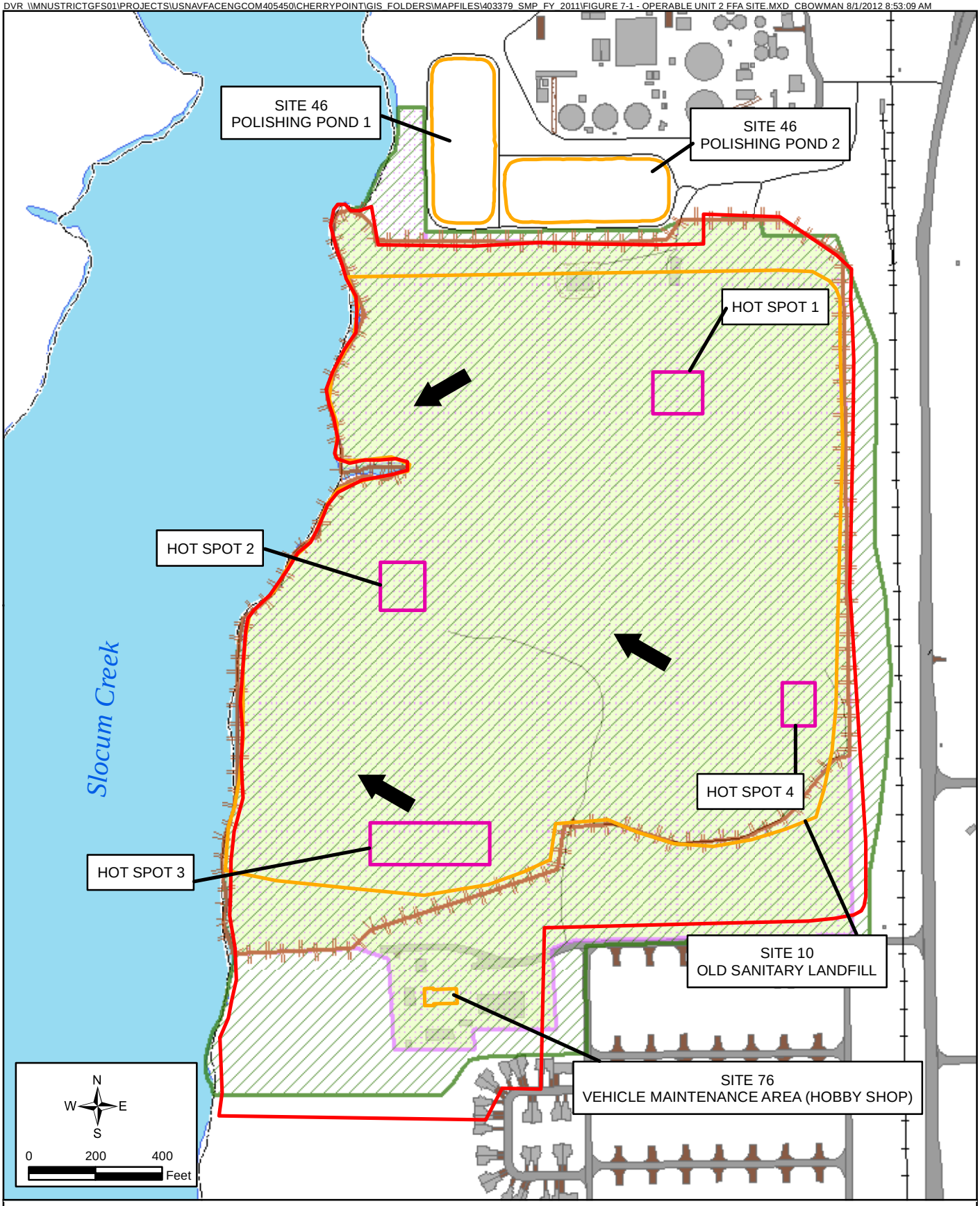
OU2			OU4	OU13	OU14	
Surficial Aquifer Monitoring Well	Turkey Gut Surface Water and Sediment	Slocum Creek Surface Water and Sediment	Surficial Aquifer Monitoring Well	Surficial Aquifer Monitoring Well	Surficial Aquifer Monitoring Well	
OU2-10EGW02	OU2-SW/SDLT03	OU2-SW/SDLT04	OU4-MW08	OU13-19GW07	OU14-13GW02	OU14-72GW07
OU2-10GW09		OU2-SW/SDLT05	OU4-MW13	OU13-21GW02	OU14-13GW10	OU14-72GW09
OU2-10GW10		OU2-SW/SDLT06		OU13-21GW08	OU14-13GW11	OU14-72GW12
OU2-10GW11				OU13-21GW09	OU14-13GW12	OU14-72GW14
OU2-10GW29				OU13-21GW10	OU14-13GW17	OU14-72GW15
OU2-10GW94				OU13-21GW11	OU14-13GW20	OU14-72GW18
OU2-10GW98				OU13-21GW14	OU14-13GW21	OU14-72GW19
OU2-85GW01					OU14-13GW25	OU14-72GW21
OU2-10GWXX*					OU14-13GW29	OU14-72GW26
					OU14-13GW33	OU14-72GW27
					OU14-13GW120A	OU14-72GW28
					OU14-13GW135	OU14-72GW29
					OU14-13GW143	OU14-90GW01
					OU14-13GW144	OU14-90GW02
					OU14-52GW02	OU14-90GW03
					OU14-56GW07	OU14-90GW04
					OU14-56GW09	OU14-90GW05
					OU14-56GW13	OU14-90GW06R
					OU14-66GW02	OU14-90GW07
					OU14-66GW03	OU14-90GW08
					OU14-66GW05	OU14-90GW09
					OU14-66GW07	OU14-90GW10
					OU14-66GW10	OU14-90GW11
					OU14-66GW14	OU14-90GW13
					OU14-66GW28	OU14-90GW14
					OU14-66GW29	OU14-90GW15D
					OU14-66GW33	OU14-90GW16
					OU14-66GW34	OU14-90GW19
					OU14-66GW35	OU14-90GW20
					OU14-66GW36	OU14-90GW21
					OU14-66GW37	OU14-90GW22
					OU14-66GW47	OU14-90GW23
					OU14-66GW138	OU14-90GW24
					OU14-66GW139	OU14-90GW25
					OU14-72GW02	OU1-MW61
					OU14-72GW04	OU1-MW62
					OU14-72GW06	

Blue indicates wells that are sampled for selected natural attenuation parameters in addition to site contaminants of concern (COCs).

Red indicates wells/locations that were originally sampled as part of LTM but have since been eliminated due to attainment of remediation goals.

LTM at each OU will continue until performance standards listed in the ROD are not exceeded, confirmation sampling is conducted, and regulatory concurrence has been received.

*Well to be installed in 2012 and assigned a well ID number.



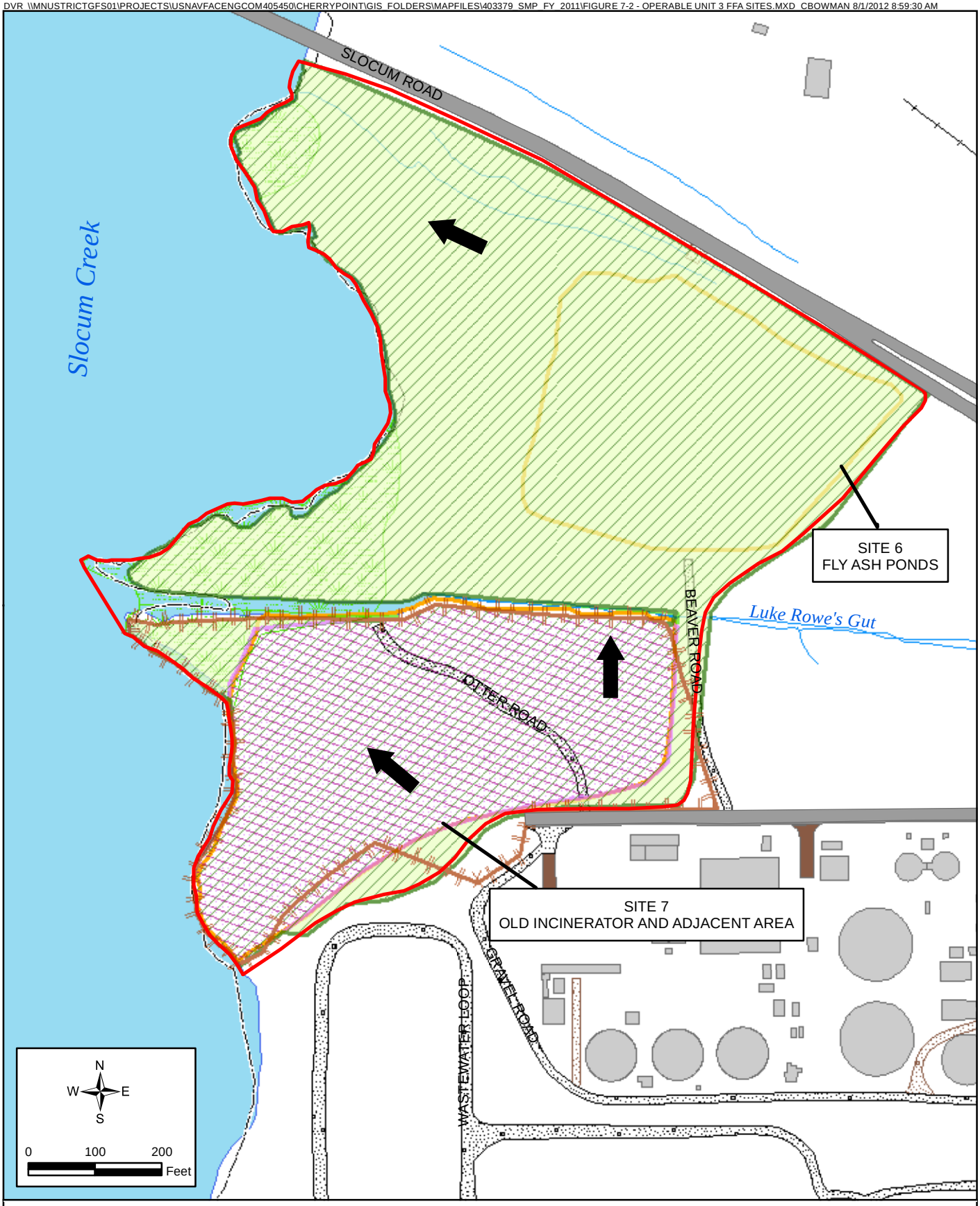
Legend

- OU Boundary
- Site Boundary
- Hot Spots
- Buildings
- Base Boundary
- Road
- Groundwater Use Prohibited
- Intrusive Activities Below Water Table Prohibited
- Restricted Access - Fence & Signs Required
- Site Use Restricted - Industrial Use Only
- Groundwater Flow Direction

Figure 7-1
Operable Unit 2 FFA Sites
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 7-2 - OPERABLE UNIT 3 FFA SITES.MXD CBOWMAN 8/1/2012 8:59:30 AM



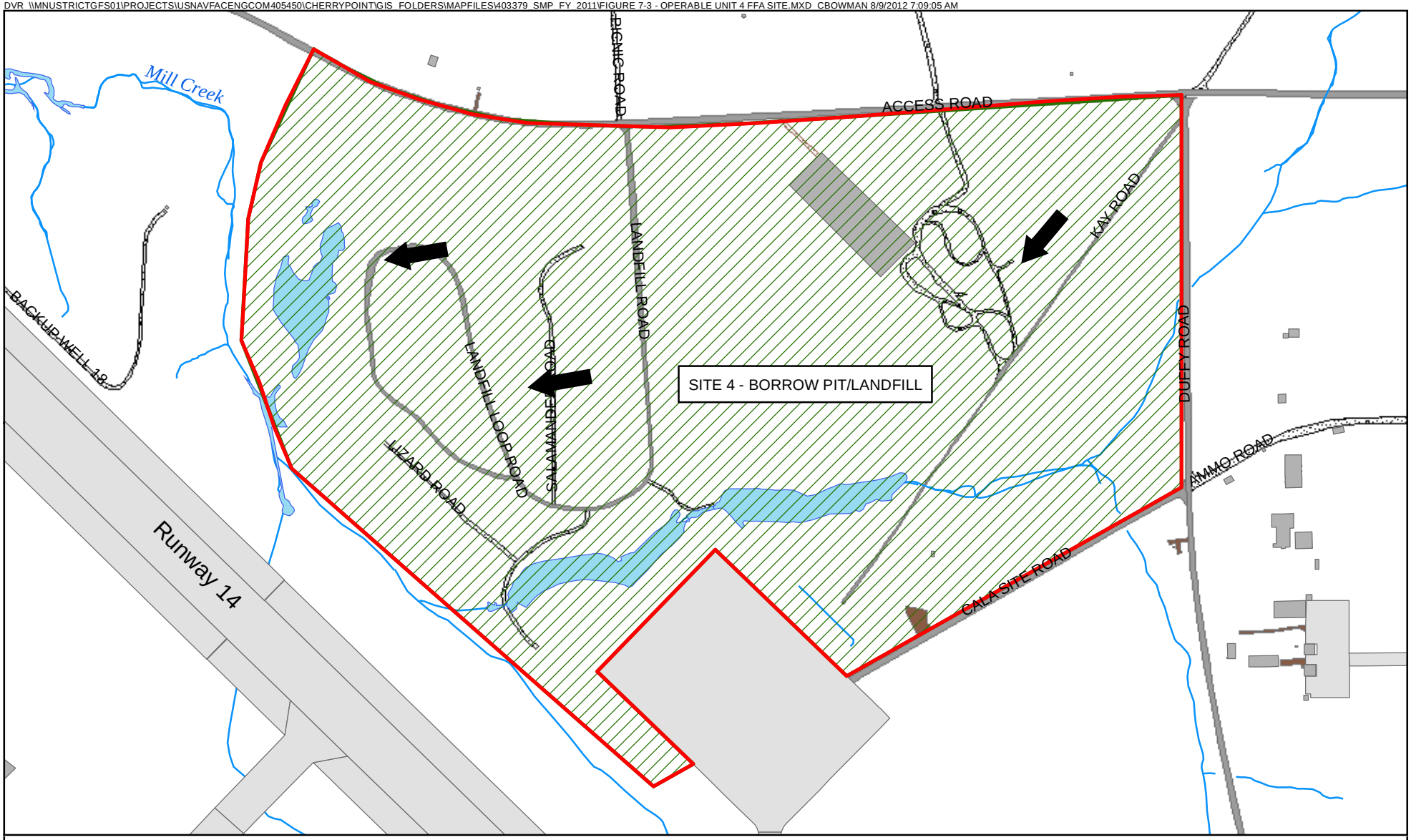
Legend

- OU Boundary
- Site Boundary
- Base Boundary
- Buildings
- Wetlands
- Road
- Surface Water
- Groundwater Use Prohibited
- Intrusive Activities Prohibited
- Restricted Access - Fence & Signs Required
- Site Use Restricted - Industrial Use Only
- Site Use Restricted - No Use Authorized
- Groundwater Flow Direction

Figure 7-2
Operable Unit 3 FFA Sites
MCAS Cherry Point, North Carolina

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 7-3 - OPERABLE UNIT 4 FFA SITE.MXD CBOWMAN 8/9/2012 7:09:05 AM



Legend

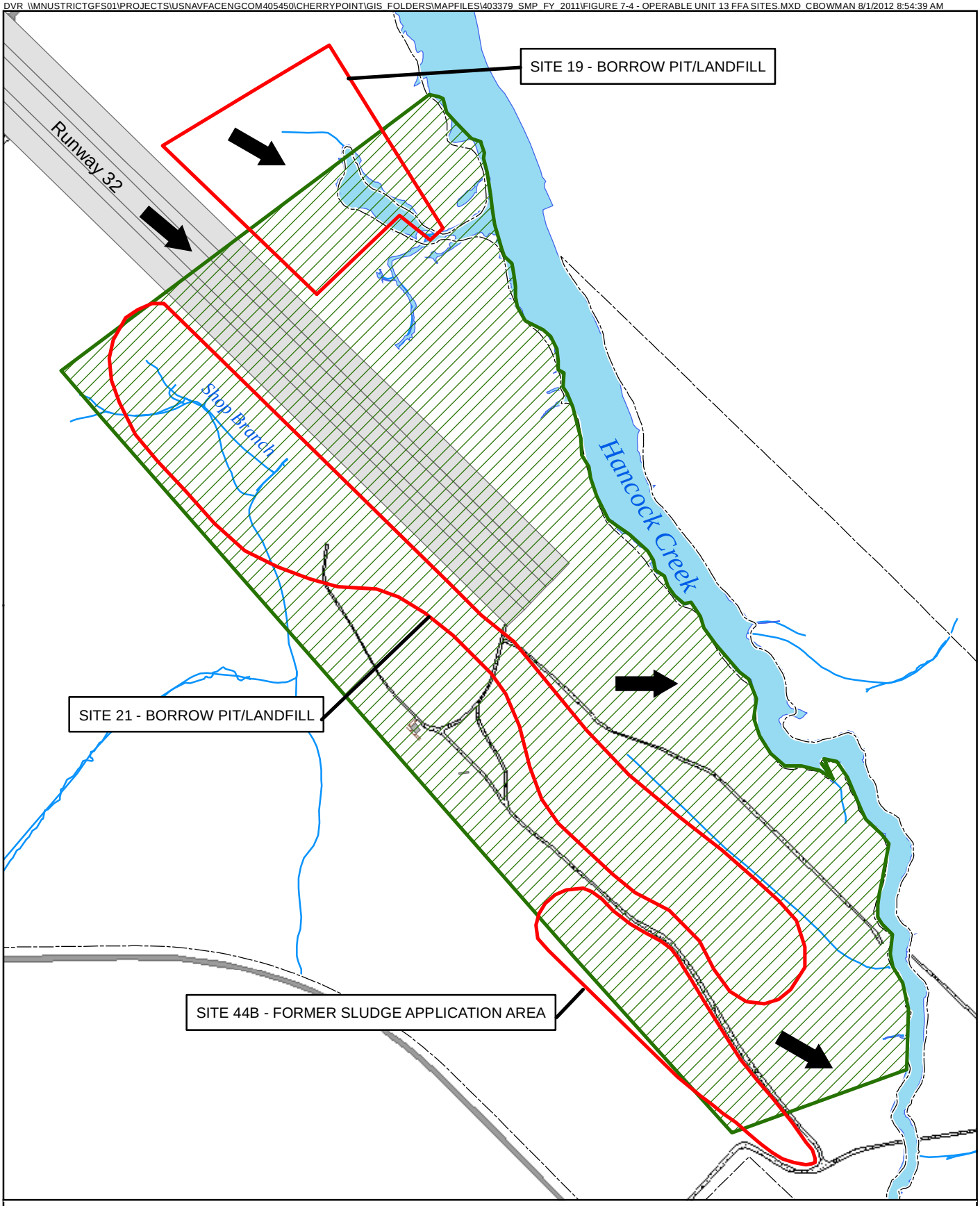
- OU Boundary
- Land Use Control Boundary; Surficial Groundwater Use Prohibited
- Buildings
- Runway
- Road
- Surface Water
- Groundwater Flow Direction

N
W E
S

0 250 500
Feet

Figure 7-3
Operable Unit 4 FFA Site
MCAS Cherry Point, NC

CH2MHILL



Legend

- OU/Site Boundary
- Land Use Control Boundary
  Surficial Groundwater Use Prohibited
- Base Boundary
- Buildings
- Groundwater Flow Direction
- Road
- Runway
- Surface Water

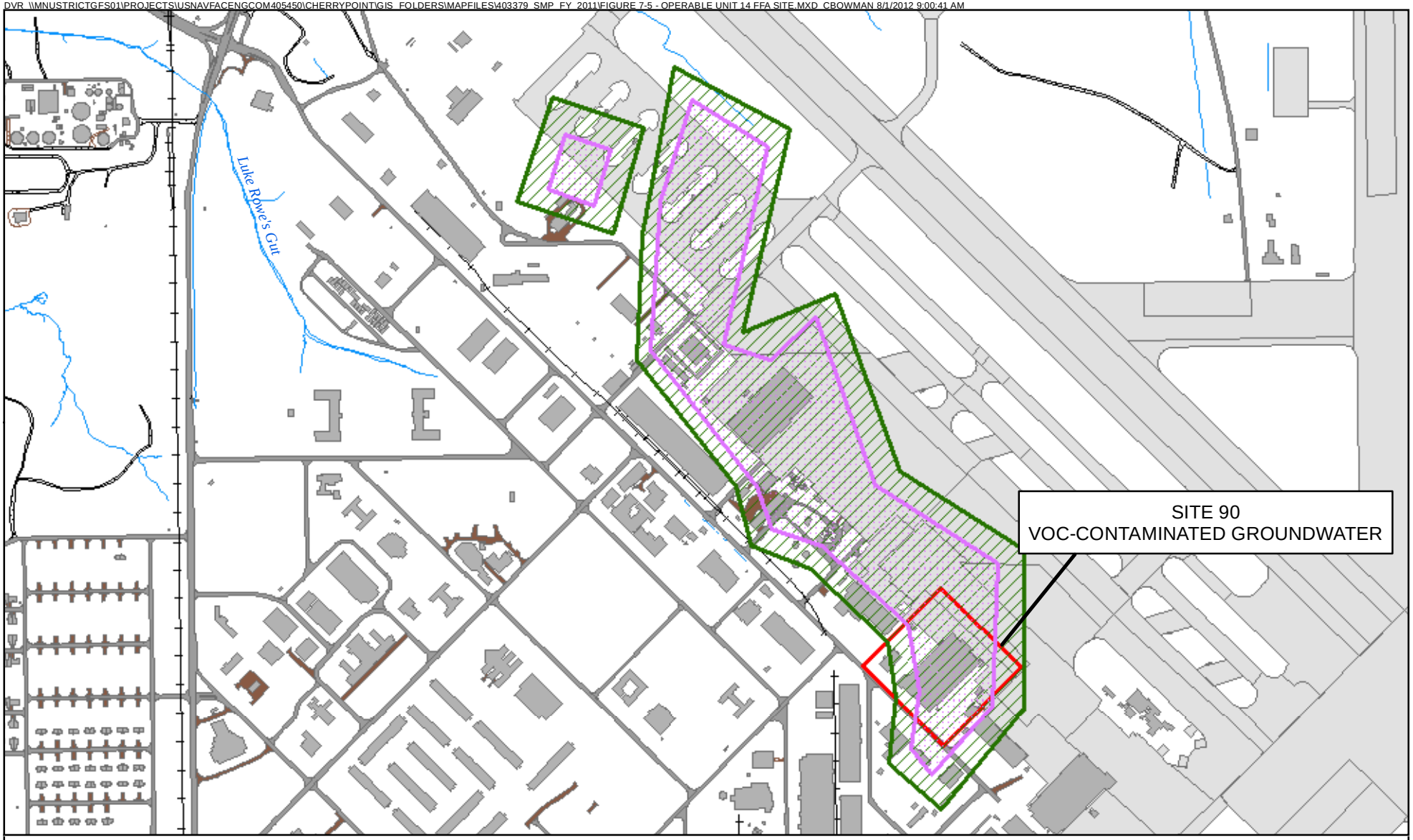
N
W E
S

0 300 600
Feet

Figure 7-4
Operable Unit 13 FFA Sites
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 7-5 - OPERABLE UNIT 14 FFA SITE.MXD CBOWMAN 8/1/2012 9:00:41 AM



Legend

- Intrusive activities below the water table prohibited/Vapor Intrusion evaluation required for building construction/modification
- Well installation and groundwater use prohibited (except for monitoring and remediation purposes)
- Surface Water
- Railroad
- OU/Site Boundary
- Buildings
- Road
- Runway

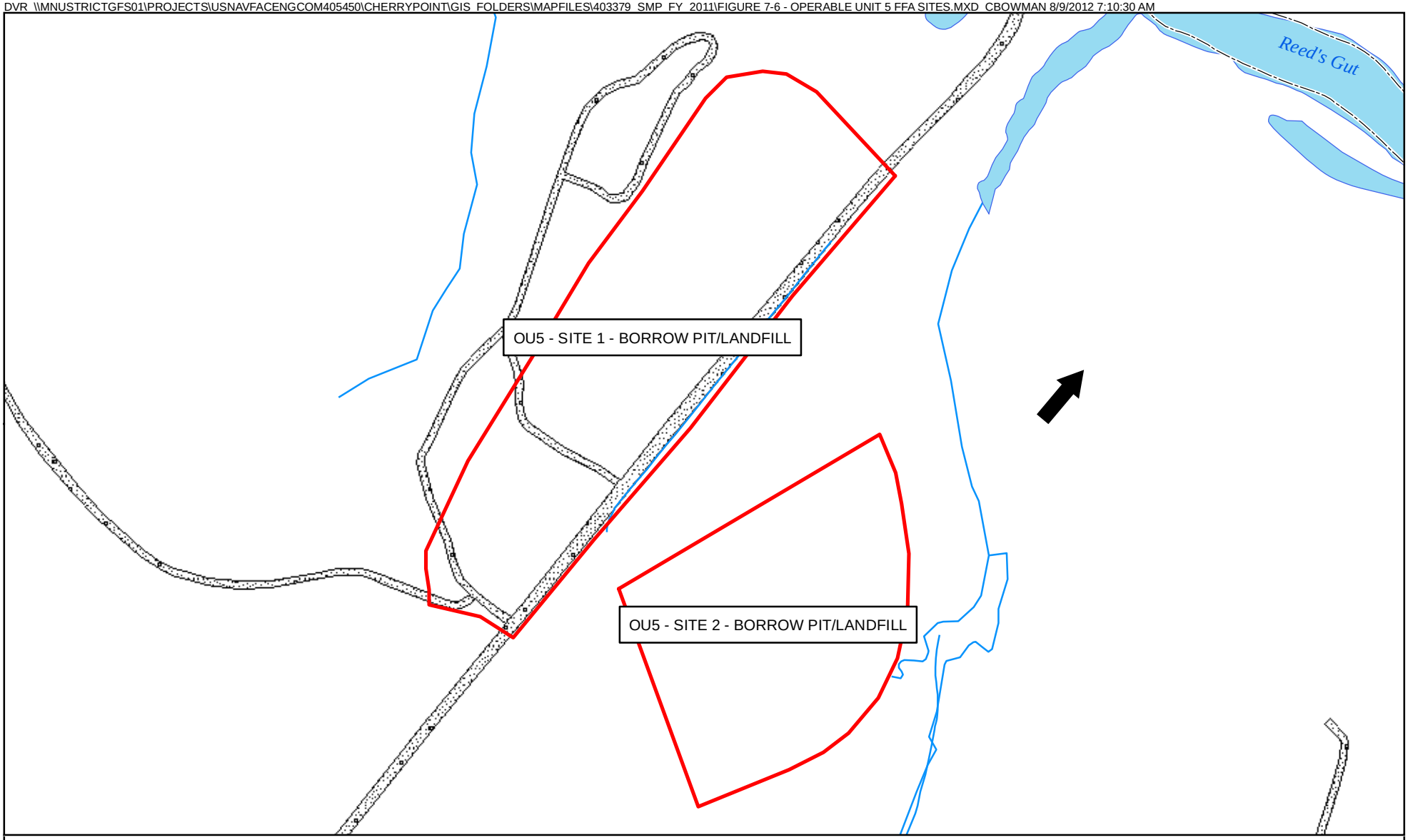
N
W E
S

0 425 850
Feet

Figure 7-5
Operable Unit 14 FFA Site
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 7-6 - OPERABLE UNIT 5 FFA SITES.MXD CBOWMAN 8/9/2012 7:10:30 AM



Legend

- OU/Site Boundary
- Base Boundary
- Road
- Surface Water

Groundwater Flow Direction

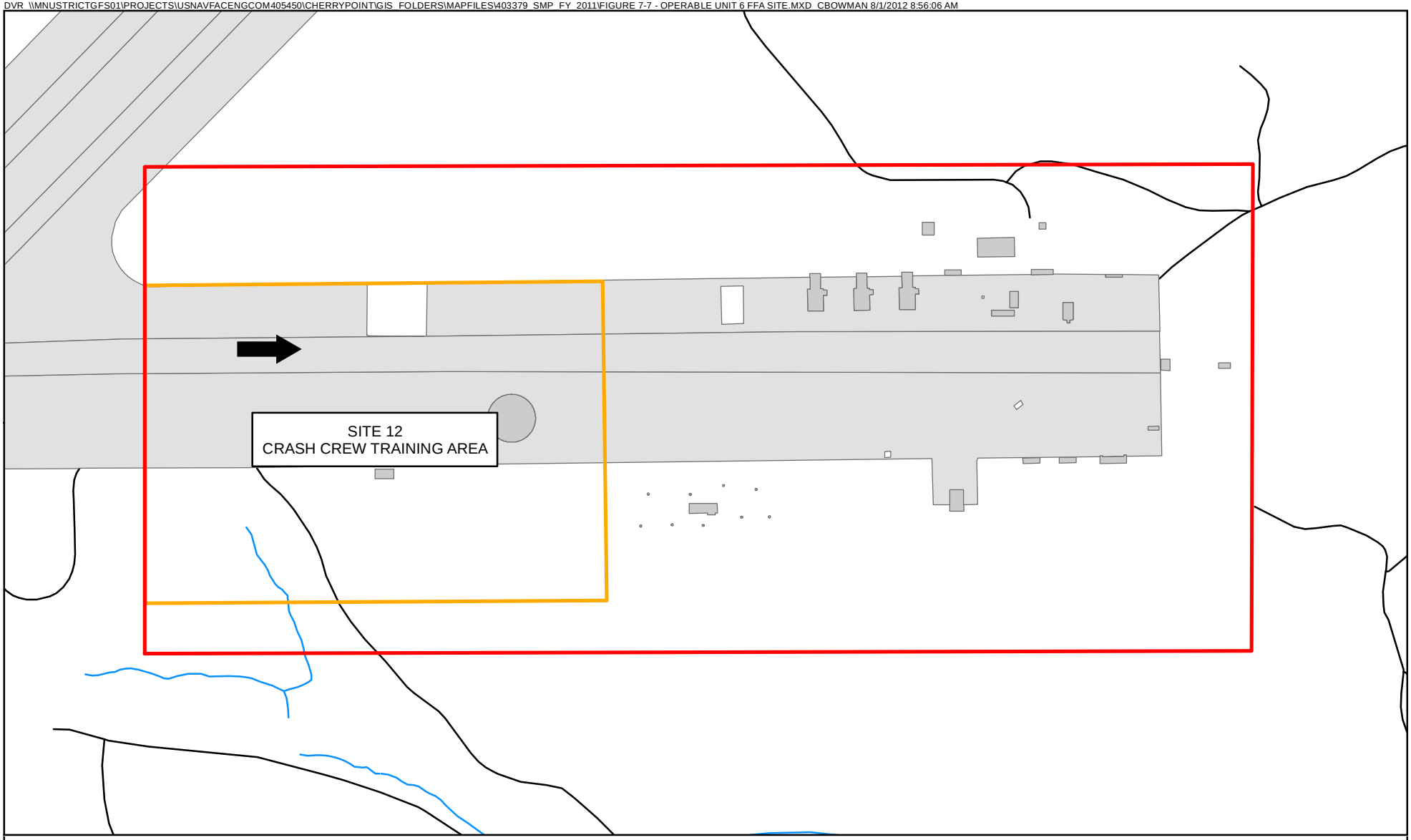
N
W E
S

0 112.5 225
Feet

Figure 7-6
Operable Unit 5 FFA Sites
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 7-7 - OPERABLE UNIT 6 FFA SITE.MXD CBOWMAN 8/1/2012 8:56:06 AM



Legend

- OU Boundary
- Site Boundary
- Runway
- Buildings
- Surface Water
- Groundwater Flow Direction

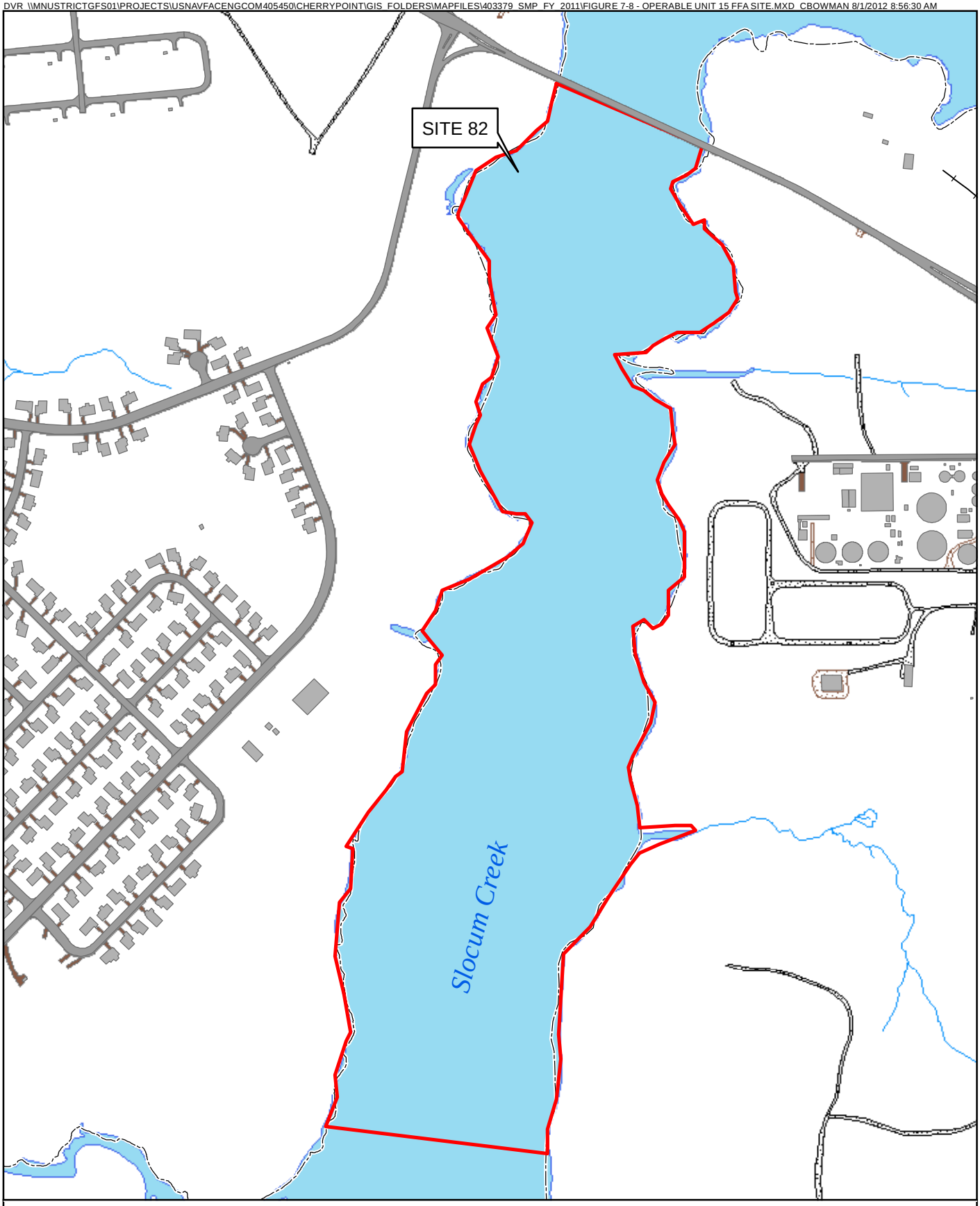
N
W E
S

0 150 300
Feet

Figure 7-7
Operable Unit 6 FFA Site
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 7-8 - OPERABLE UNIT 15 FFA SITE.MXD CBOWMAN 8/1/2012 8:56:30 AM



Legend

- OU/Site Boundary
- Base Boundary
- Buildings
- Road
- Surface Water

N
W E
S

0 250 500
Feet

Figure 7-8
Operable Unit 15 FFA Site
MCAS Cherry Point, NC

CH2MHILL

SECTION 8

Descriptions of Preliminary Screening Areas (PSAs) and Site Screening Areas (SSAs)

8.1 Preliminary Screening Areas

The sites described in this section were identified in the FFA as PSAs requiring desktop audits. These sites may have been previously referred to as points of environmental interest (POEIs). POEI terminology was retained for documents that had already been produced when the FFA was signed.

8.1.1 POEIs 22 and 23—Radioactive Waste Storage Areas #1 and #2

POEI 22 is located near Buildings 133 and 421, and POEI 23 is located in Building 134, within FRCE (**Figure 8-1**). POEI 22 consists of a concrete pad and curb covered with an overhead roof that is fenced to control site access, while POEI 23 consists of a room located in the southeast corner of Building 134. These POEIs were identified during February and April 1998 site visits. The areas were historically used to store low-level radioactive solids (aircraft engine and transmission parts).

Consensus was reached by the MCAS Cherry Point Partnering Team in September 2000 to retain these areas as POEIs pending receipt of additional information regarding actual operations at the sites in question. Interviews were conducted with Station Radiological Affairs Support Office personnel and the following information was provided:

- All operations at these sites were conducted in strict adherence to Standard Operating Procedures (SOPs) for Ionizing Radiation (MCAS Cherry Point INST IR-001, published and maintained by Occupational Safety and Health Division, Naval Aviation Depot, MCAS Cherry Point).
- The material stored at these POEIs was very low-level radioactive magnesium thorium, and was a byproduct of the manufacture of J79 transfer, rear, and inlet gearbox casings. All parts were machined in Building 133, and waste scrap, millings, etc., were strictly managed in accordance with IAW IR-001 (placed in sealed 55-gallon drums, properly labeled, stored and disposed of by safety office personnel [Code 6.8.810]). By following the SOP, there was extremely low probability for a release at the POEIs. Based on this information, closure of POEIs 22 and 23 was recommended in October 2000 as part of a POEI Closure Document prepared by the Navy.

In January 2001, the USEPA responded by letter to the POEI Closure document (USEPA, 2001a). The letter indicated that the USEPA was waiting on feedback from its radiological support staff and was not yet able to provide concurrence on the proposed closure of Radioactive Waste Storage Areas #1 and #2 (P-22 and P-23). The USEPA also requested a copy of the SOPs for Ionizing Radiation. In 2006, the Navy's Radiological Affairs Support Office (RASO) completed a final status survey, which included measurements and sampling at these two storage areas. The survey results showed that there was no residual radiological activity exceeding the Nuclear Regulatory Commission (NRC) release limits. In April 2006, based on the survey report, RASO determined that POEIs 22 and 23 met the NRC criteria for unrestricted use. In April 2008, the Navy submitted a letter to USEPA documenting the findings of the 2006 RASO survey and requesting closure of POEIs 22 and 23. USEPA responded in May 2008 with a concurrence letter approving the designation of No Further Action for POEIs 22 and 23. As a result, these sites are closed and are no longer active Preliminary Screening Areas.

8.2 Site Screening Areas

The sites described in this section have been identified in the FFA as requiring screening for possible inclusion in the CERCLA RI/FS process. Some of the sites on this list may have been previously referred to as POEIs. POEI terminology was retained for documents that had already been produced when the FFA was signed.

8.2.1 POEI 35a—High Power Engine Run-Up Area and Test Cells

POEI 35a consists of the eastern end of Runway 28, near OU6 (**Figure 8-2**). The runway surface in this area is mostly asphalt, with a number of relatively small concrete pads. The runway represents a topographic high in the immediate area, and is bordered by grassy areas with dense woods beyond. Most of the area is used for engine high power run-up activities, and consists of a series of test pads where aircraft engines are mounted on racks and run at high speeds for maintenance purposes. The southwestern portion of POEI 35a is used for experimentation regarding long-term storage and preservation of aircraft. POEI 35a was identified during a 1997 regulator site visit as a potential contaminant source area based on the nature of historical site activities. Shallow groundwater flow at Site 35a generally flows east toward Hancock Creek. The water table is encountered at approximately 11 ft below ground surface (bgs).

In 1996, soil and groundwater samples were collected at POEI 35a, and TPH, oil and grease, and inorganic constituents were detected in the soil samples (R. E. Wright, 1996). Lead and a trace of one VOC were detected in the groundwater. Based on these results, a POEI Evaluation was conducted in 1999 that included the collection of soil, groundwater, surface water, and sediment samples. The POEI Evaluation sampling results were presented in the *Final POEI Evaluation Report* in January 2004 (CH2M HILL, 2004b), which concluded that there had not been a significant release of contaminants to the environment from Site 35a. The detected constituents that exceeded human health screening criteria did not appear to be related to site-specific activities, and NFA was recommended (CH2M HILL, 2004a). A Decision Document (DD) signed in June 2004 documented regulatory concurrence with the NFA recommendation (CH2M HILL, 2004a).

Site History—POEI (SSA) 35a

Event	Date
Aircraft engine maintenance/test area	Present
Soil/Groundwater Study	1996
Work Plan for OU6	1999
Evaluation Report	2004
DD	2004

8.2.2 Site 85—Hobby Shop Disposal Area

Site 85 was identified as a waste disposal area, approximately 0.33 acres in size, located near the eastern shoreline of Slocum Creek (OHM, 1998c). Site 85 is situated immediately west of the base auto hobby shop (OU2, Site 76) (**Figure 8-3**). Much of Site 85 consists of a relatively flat forested area bordering the tidal open waters of Slocum Creek to the west. In the eastern part of the site, a short slope leads eastward toward the adjoining developed areas (CH2M HILL, 2001).

Site 85 historically contained a significant amount of surface debris that had been disposed of at the site. No records indicating the quantities or types of wastes disposed of at the site are known to exist, nor is it specifically known when disposal activities occurred. The exposed debris included empty 55-gallon drums, empty 5- to 15-gallon steel pails, automobiles, concrete debris, office equipment, rubber tires, fire hoses, steel matting, pipes, a set of metal spectator bleachers, and various other items (OHM, 1998c).

In 1997, site inspections revealed evidence that MCAS Cherry Point residents, including children, had trespassed onto Site 85, and had used the site for play activities. A rope swing was found hanging from a tree. As a result of this discovery, an emergency response action was taken to secure the site with fencing to prevent potential human exposure. A wetlands delineation was completed in 1997 to minimize wetlands impacts during a planned debris removal at Site 85 (B&R, 1998). Debris removal activities were completed in 1998. Approximately 30 to 40 cubic yards of metal and debris were removed from the site (OHM, 1998c).

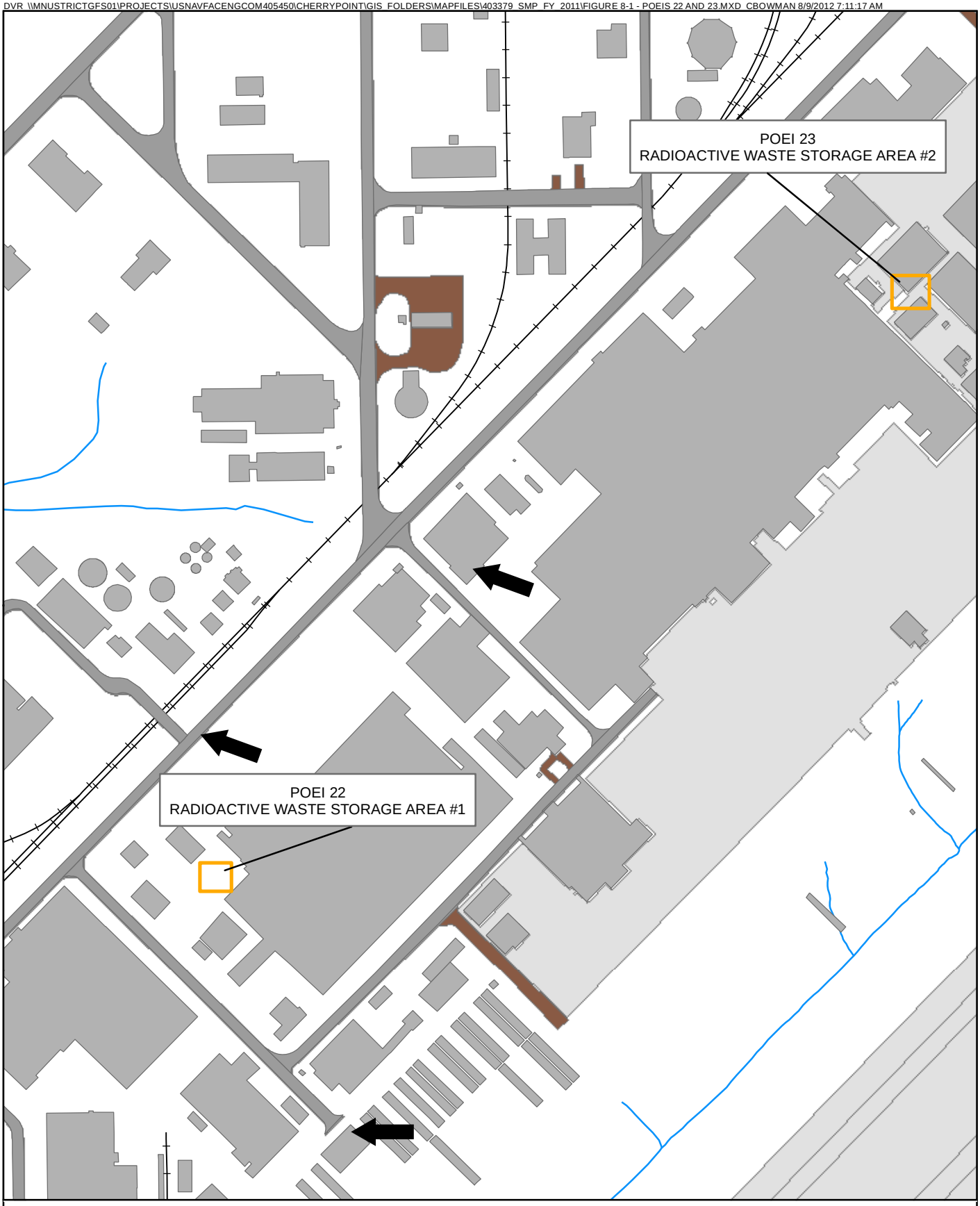
In 2001, a Site Screening Process (SSP) investigation was conducted at Site 85. The SSP investigation included the collection of soil and groundwater samples to determine if residual contamination remained at the site following the debris removal, and whether groundwater had been impacted by past disposal activities. The SSP Report

concluded that there was not significant contamination, and NFA was recommended (CH2M HILL, 2003d). A DD signed in September 2003 documented regulatory concurrence with the NFA recommendation.

Site History—Site 85

Event	Date
Waste Disposal Area—empty drums, automobiles, concrete debris, office equipment, rubber tires, fire hoses, steel matting, pipes and other items were found	unknown
Wetland Delineation report for Site 85	1998
Action Memorandum, Debris Removal	1998
Site Screening Process Work Plan	2001
Site Screening Process Report	2002
Site Screening Area DD	2003

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 8-1 - POEIS 22 AND 23.MXD CBOWMAN 8/9/2012 7:11:17 AM



Legend

- POEI Boundary
- Buildings
- Buildings - Demolition Scheduled
- Road
- Runway
- Groundwater Flow Direction
- Paved Driveway
- Railroad
- Surface Water

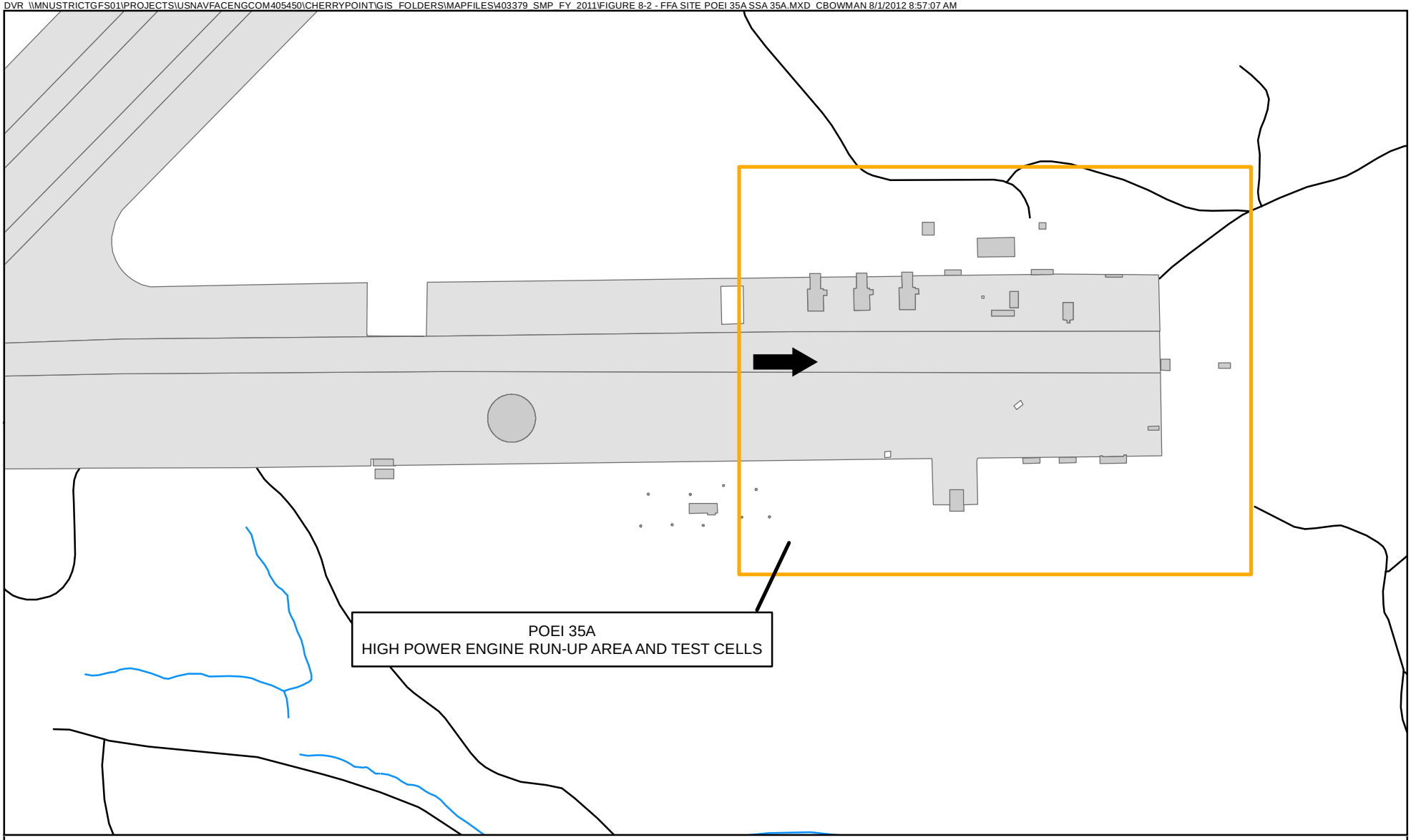
N
W E
S

0 150 300
Feet

Figure 8-1
POEIs 22 and 23
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 8-2 - FFA SITE POEI 35A SSA 35A.MXD CBOWMAN 8/1/2012 8:57:07 AM



Legend

- POEI Boundary
- Runway
- Buildings
- Surface Water
- Groundwater Flow Direction

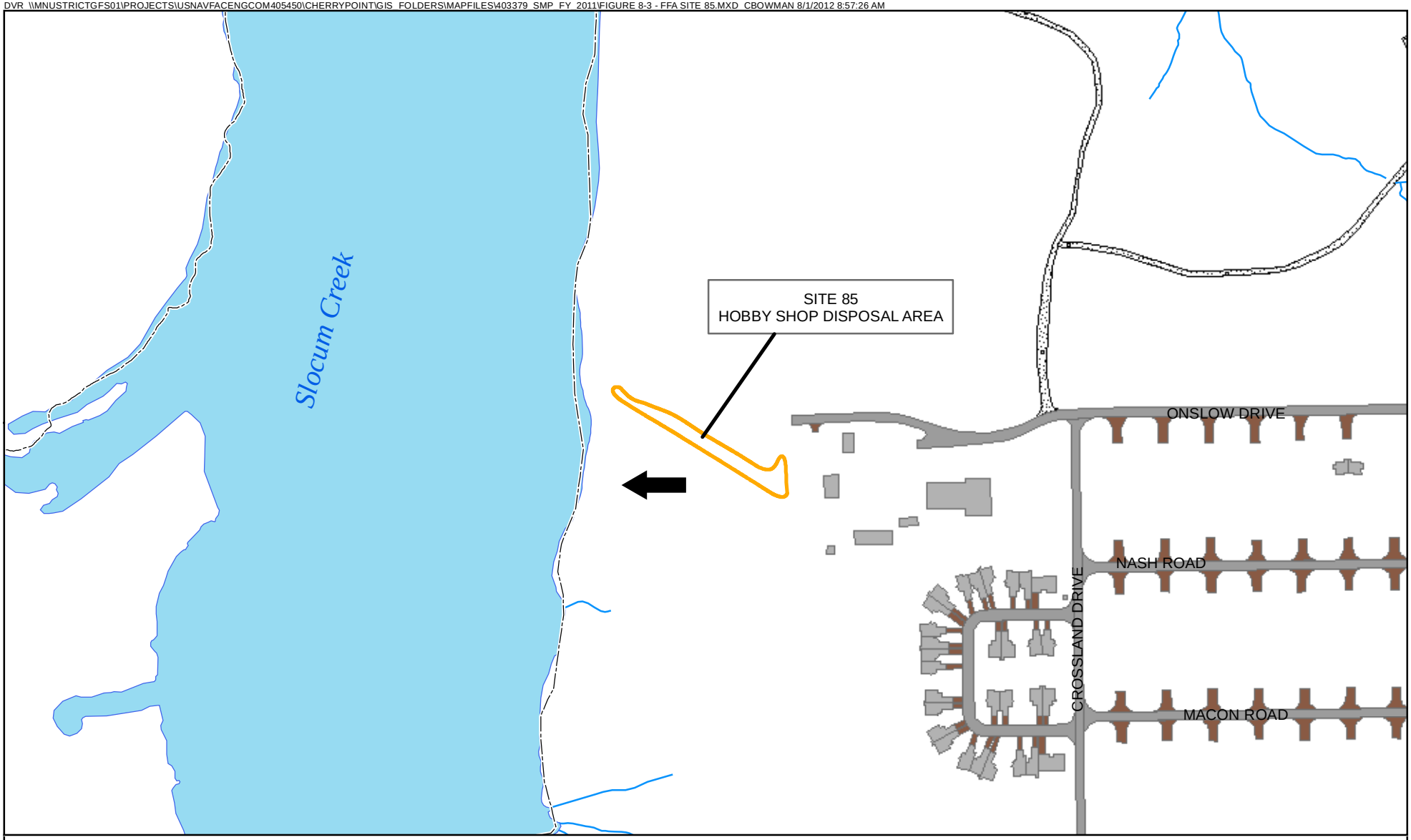
N
W E
S

0 150 300
Feet

Figure 8-2
FFA Site POEI 35a (SSA 35a)
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 8-3 - FFA SITE 85.MXD CBOWMAN 8/1/2012 8:57:26 AM



Legend

- Site Boundary
- Base Boundary
- Road
- Buildings
- Surface Water
- Groundwater Flow Direction

N
W E
S

0 150 300
Feet

Figure 8-3
FFA Site 85
MCAS Cherry Point, NC

CH2MHILL

SECTION 9

Removal Actions and Remedial Actions

Remediation activities that are conducted as part of the final remedy for a site (i.e., resulting from a ROD or other DD) are defined under CERCLA as RAs. Remediation activities that take place prior to the selection of a final remedy for a site include removal actions and Interim RAs. Removal actions involve the physical removal of site contaminants, and are taken to prevent immediate and substantial harm to human health (TCRAs) or to reduce the potential for harm to human health (NTCRAs). Interim RAs are other types of remediation activities intended to prevent a potential release of contaminants, reduce the severity of a contaminant release, or minimize the further migration of contaminants.

Historic removal actions, RAs, and Interim RAs that have been conducted or are pending at MCAS Cherry Point FFA sites are described below, listed according to the OU and site. The Navy will continue to identify potential removal actions and RAs, where warranted, as investigation activities continue.

Two CERCLA 5-year reviews have been conducted at MCAS Cherry Point to evaluate the ongoing protectiveness to human health and the environment of the various remediation activities that have been conducted to date. The first 5-year review was performed in 2002 and the second in 2007 (document finalized in early 2008). The third 5-year review is being conducted during FY2012 and the final document is anticipated to be submitted in early calendar year 2013. The major conclusions of the 5-year reviews are presented at the end of this section.

9.1 Operable Unit 1

9.1.1 Site 16—Landfill at Sandy Branch

In 1996, a pilot-scale AS/SVE system was installed for groundwater remediation (B&R, 1997b). A full-scale AS/SVE system was installed in 1998 as part of a NTCRA. The partnering team agreed to shut down the AS/SVE system in February 2005 because it was not achieving the RAOs. In March 2005, the AS/SVE system was shut down and the Site 16 AS/SVE system closeout report was finalized in August 2006 (AGVIQ/CH2M HILL, 2006b). The major equipment components of the AS/SVE system and the SVE wells were removed in October 2009. The associated Construction Closeout Report was submitted in February 2010 (Rhēa, 2010d). The remaining air sparge wells and conveyance lines were decommissioned in March 2011 and the associated Construction Closeout Report was submitted in May 2011 (Rhēa, 2011c).

In 1997, a time-critical removal action was conducted in the southern portion of Site 16 that included the removal of debris piles containing asbestos, steel storage tanks, and soil contaminated with petroleum hydrocarbons (OHM, 1998a). The following materials were reportedly excavated and disposed:

- 538 tons of TPH-contaminated soil
- 386 tons of asbestos-contaminated soil
- 238 tons of TPH and asbestos-contaminated soil
- 139 tons of lead-contaminated soil
- 790 cubic yards of asbestos pipe material

9.1.2 OU1 Central Groundwater Plume Interim Remedial Action

The Interim ROD for the OU1 Central Groundwater Plume Interim RA (B&R, 1996c) called for the installation of a pump and treat system for groundwater remediation. The groundwater extraction wells were installed in 1998 and the system recovered groundwater for discharge to the IWTP for treatment from 1999 until the system was shut down in 2005. Before system startup, an upgrade to the IWTP was implemented to ensure adequate treatment. As a result of decreasing efficiency and the potential for interference with ongoing attempts to further define the nature and extent of OU1 groundwater contamination by altering local groundwater gradients, the groundwater extraction and treatment system was shut down in February 2005. Alternative remediation technologies were evaluated as part of the OU1 FS activities.

9.1.3 Site 51—Building 137 Former Plating Shop

An enhanced bioremediation treatability study involving the injection of the substrate HRC® into surficial aquifer groundwater was initiated at Site 51 in May 2001. The work plan for the treatability study also associated the treatability study with portions of Sites 47 and 92; however, the treatability study specifically targeted Site 51. The purpose of the treatability study was to determine the effectiveness of enhanced bioremediation using HRC® to remediate a small plume of cVOCs in the shallow groundwater beneath Site 51. Groundwater monitoring of VOCs and geotechnical parameters was conducted before the HRC® injection in late 2001 and during six post-injection monitoring events conducted during a 1-year period. At the end of the 1-year period, the concentration of total cVOCs had been reduced more than 90 percent in the heart of the plume, but individual constituents remained at concentrations that exceeded regulatory screening criteria (CH2M HILL, 2003c). The study concluded that additional treatment would be required to further reduce residual concentrations.

9.1.4 Site 51—Building 137 Former Plating Shop and Site 52—Building 133 Former Plating Shop and Ditch

A second enhanced bioremediation treatability study involving the injection of the substrate EHC™ into surficial aquifer groundwater was initiated in late 2004. The purpose of the treatability study was to determine the effectiveness of enhanced bioremediation using EHC™ to remediate areas of cVOC contamination in the shallow groundwater beneath Site 51 and Site 52. Groundwater monitoring of VOCs and geotechnical parameters were conducted before the EHC™ injection in late 2004. The treatability study included four post-injection monitoring events during an 8-month period. The final post-injection performance monitoring event was completed in November 2005. The results were evaluated to determine the effectiveness of the EHC™ injection, and were summarized in a treatability study report that was finalized in December 2007 (CH2M HILL, 2007). The report concluded that the EHC™ injection was initially effective in reducing cVOC concentrations in wells located near the injection points and that cVOC mass reduction was achieved. However, the concentrations of some of the contaminants rebounded significantly with time, in part due to under-dosing of the injected substrate as well as the likely presence of contributing cVOC sources such as DNAPLs in the aquifer.

9.1.5 Sandy Branch Tributary #2

In 2007, the MCAS Cherry Point ER Program Partnering Team developed a clean-up strategy for Sandy Branch Tributary #2 and adjacent flood plain areas that would be carried out as a NTCRA. The NTCRA would remove sediments and soil contaminated with various COPCs (several inorganics, pesticides, PAHs, and other SVOCs) to levels protective of at-risk ecological receptors (i.e., benthic macroinvertebrates).

In preparation for the NTCRA, an EE/CA was prepared and finalized in January 2008 (CH2M HILL 2008a). The EE/CA compared and evaluated several removal action alternatives and formed the basis of the selection of a sediment and soil removal technique for the NTCRA. The selected remedial alternative was the mechanical excavation of stream sediments and floodplain soil/sediment followed by backfilling with clean fill material.

The Removal Action Work Plan to implement the NTCRA was finalized in May 2008, and the NTCRA was completed between June and August 2008. Approximately 124 cubic yards of stream sediments and 811 cubic yards of floodplain sediments were excavated and disposed of at a North Carolina-permitted Subtitle D landfill approved by the USEPA to receive CERCLA wastes. The Remedial Action Closeout Report was finalized in June 2009.

9.1.6 OU1 Central Groundwater Plume In-Situ Enhanced Bioremediation Pilot Study

In August 2010, the MCAS Cherry Point Partnering Team agreed to conduct a field-scale pilot study at OU1 to evaluate the site-specific effectiveness of in-situ enhanced bioremediation downgradient of Building 133 near the source of the Central Groundwater Plume. The purpose of this pilot study is to gather information to aid in the selection of a final remedy to address the plume and also to possibly contribute in the Remedial Design phase. The pilot study includes the installation of 14 injection wells (seven nested pairs, each consisting of one upper surficial and one lower surficial aquifer well) and 5 monitoring wells (two upper surficial and three lower surficial

aquifer wells), the injection of reagents (i.e., emulsified vegetable oil and a bioaugmentation culture), and post-injection performance monitoring via 5 rounds of groundwater sampling and analysis. The Pilot Study Implementation Plan (CH2M HILL, 2011c) and Sampling and Analysis Plan (CH2M HILL, 2011d) were finalized in March 2011, and pilot study well installation and reagent injection field activities were completed in May and June 2011. Post-injection groundwater monitoring activities are underway and will be completed in 2013.

9.1.7 OU1 Central Groundwater Plume Permeable Reactive Barrier Pilot Study

In March 2011, the MCAS Cherry Point Partnering Team agreed to move forward on a pilot study to construct a PRB in the downgradient portion of the Central Groundwater Plume near East Prong Slocum Creek. The PRB installation, site restoration, and installation of additional monitoring wells for PRB performance monitoring was completed in August and September 2012. The PRB is approximately 600 feet in length and consists of a combination of zero-valent iron and sand. The results of the PRB pilot study will help determine the maximum feasible trenching depth that can be achieved given the subsurface conditions at MCAS Cherry Point and may also provide valuable data for a future RD report for the Central Groundwater Plume.

9.2 Operable Unit 2

9.2.1 Site 10—Old Sanitary Landfill

Prior to the OU2 ROD, a SVE pilot study was conducted in 1996 at Site 10 for the remediation of VOCs in soil. In 1997, a full-scale SVE system was installed to treat soil contaminated with VOCs at four soil hot spot areas within Site 10. The Selected Remedy in the OU2 ROD signed in 1999 included MNA of groundwater, SVE at major soil hot spots within Site 10, LUCs, and LTM of groundwater, surface water, and sediment to ensure the effectiveness of natural attenuation (TT, 1999a). The boundaries of the various LUCs in place at OU2 are listed in **Table 7-1**. A fence line repair and replacement was conducted in 2003.

The SVE treatment of the soil hot spots at Site 10 was discontinued in August 2003 because the system was no longer removing a significant mass of contamination, and was not performing as a cost-effective remedial approach. After the SVE system was shut down, periodic (roughly annual) soil sampling was conducted at Site 10, Hot Spots 1, 2, 3, and 4 between 2004 and 2006. The sampling results indicated that soil VOC concentrations at Hot Spots 1, 3, and 4 were below the screening criteria and these hot spots were removed from further sampling. Further soil sampling was conducted at Hot Spot 2 in 2007 and 2008 to complete the delineation of contamination.

A Work Plan was finalized in April 2010 for the removal of the equipment and components of the Site 10 SVE system (Rhēa, 2010c). The system removal was completed in April 2010 and a Construction Closeout Report was finalized in July 2010 (Rhēa, 2010e).

Since OU2 has a ROD in place, to address Hot Spot 2 soil contamination an FFS that evaluated additional remedial alternatives for soil at Site 10, Hot Spot 2 was finalized in February 2011 (Rhēa, 2011a). The Proposed Plan for Site 10, Hot Spot 2 was finalized in April 2011(Rhēa, 2011b). The preferred alternative presented in the Proposed Plan consisted of the installation of a soil cover over areas of Hot Spot 2 where soil concentrations exceed NC SSLs to prevent direct exposure and limit infiltration and migration of soil/waste contamination to groundwater. The preferred alternative also included groundwater monitoring to ensure protection of Slocum Creek from groundwater discharge to surface water. An OU2 ROD Amendment was completed and signed in September 2011 (Rhēa, 2011d).

In preparation for the implementation of the soil cover remedy at Hot Spot 2, a Remedial Design/Remedial Action Work Plan was prepared and finalized in December 2011 (Rhēa, 2011e). The soil cover was successfully installed at Site 10, Hot Spot 2, in January and February 2012.

9.3 Operable Unit 3

9.3.1 Site 6—Fly Ash Ponds

In 1996, as part of the closure of the Air Station water treatment plant, the ponds at Site 6 were removed by solidifying and excavating the pond sludge, removing piping and debris, leveling the berms, and re-vegetating the site. The site was revegetated with pine seedlings in 1996 by MCAS Cherry Point personnel as part of a "Longleaf Pine Initiative" to return the land to its natural state (OHM, 1998b).

9.3.2 Site 7—Old Incinerator and Adjacent Area

In 2000, an AS system was installed at Site 7 to remediate a localized area of benzene soil contamination. AS was selected in favor of SVE due to the very shallow water table at the site, which would have been problematic for SVE. Based on the results of confirmatory soil samples collected in February 2001, it was noted that the extent of benzene contamination in soil at Site 7 extended beyond the radius of influence of the current AS system to the southwest and northeast (OHM, 2000). As a result, additional AS points were installed to address the extended area of contamination. Based on soil and groundwater monitoring results indicating that the AS system had effectively remediated the soil hot spot, the AS system was shut down in mid-2003 (CH2M HILL, 2003a). The MCAS Cherry Point ER Program Partnering Team agreed in October 2006 to remove the components of the AS system at Site 7, as it was not anticipated that any future use would be required. The AS system was removed in May 2007.

9.4 Operable Unit 6

9.4.1 Site 12—Crash Crew Training Area

In accordance with the *Final Remedial Action Work Plan, Operable Unit 6, Marine Corps Air Station, Cherry Point, North Carolina* (AGVIQ/CH2M HILL, 2007a), the removal of contaminated soils in the vicinity of former Burn Pit E began in March 2007 and was completed in May 2007. The purpose of the project was to remove a tar-like layer in subsurface soil that was a potential source of ethylbenzene, naphthalene, and 2-methylnaphthalene to groundwater. The excavation had a total depth of approximately 7.5 ft bgs and the total excavated volume was approximately 2,859 cubic yards, including asphalt.

Excavation was accomplished using a hydraulic excavator. The top 3 feet of soil was stockpiled as anticipated "clean" overburden. Soils excavated from 3 to 7 feet bgs were stockpiled as waste. Verification samples were collected from the potentially clean overburden stockpiles to verify that the overburden could be used as backfill at the site. Due to NC SSL exceedances observed in the verification samples, the stockpiled overburden material was not used as backfill at the site, and additional backfill material from an offsite source was used to fulfill the deficit in backfill quantities. Characterization sample results indicated that the overburden material could be disposed of at a Subtitle D landfill.

The final limits of excavation were verified by confirmation samples collected at six sidewall and four bed (floor) of excavation locations. The confirmation samples were analyzed for ethylbenzene, 2-methylnaphthalene, and naphthalene. Confirmation sample concentrations were less than NC SSLs, thereby confirming that impacted soil had been removed in accordance with the soil RA requirements. The site was then backfilled with clean fill, compacted, and the surface restored with an asphalt pavement consisting of a stone base, 8 to 12 inches thick, covered by 3 inches of asphalt.

Upon completion of the asphalt installation, a new monitoring well, 12GW08, was installed in the center of the excavation area in accordance with the RA Work Plan in order to allow LTM of groundwater directly beneath the former location of contaminated soils.

LTM of groundwater associated with the MNA component of the remedy began in June 2007. In late 2008, LTM activities were terminated at OU6, as all COCs were found during four or more consecutive quarterly sampling events to either be no longer detected or at concentrations below the performance standards specified in the OU6 ROD. A RACR establishing RC for OU6 was finalized in August 2008.

9.5 Site 85—Hobby Shop Disposal Area

Site 85 is a Site Screening Area that contained a significant amount of largely surface debris that had been disposed of at the site. The exposed debris included empty 55-gallon drums, empty 5- to 15-gallon steel pails, automobiles, concrete debris, office equipment, rubber tires, fire hoses, steel matting, pipes, and metal spectator bleachers (OHM, 1998c).

In 1997, an emergency response action was taken to secure the site with fencing to prevent potential human exposure after it was determined that the site had been used for play activities by MCAS Cherry Point residents. A wetlands delineation was completed in 1997 to minimize wetlands impacts during a planned debris removal at Site 85 (B&R, 1998). A removal action was conducted in 1998 to remove exposed solid waste and debris. Approximately 30 to 40 cubic yards of metal and debris were removed from the site (OHM, 1998c).

9.6 Five-Year Review—2002

A CERCLA 5-year review was first conducted by the Navy at MCAS Cherry Point in 2002. The Five-Year Review Report was finalized in November 2002 (CH2M HILL, 2002c), and addresses remedies and RAs that have been implemented within all OUs for which there is a ROD or action memorandum in place, and at which contaminants remain at concentrations exceeding criteria that allow for unlimited use and unrestricted exposure.

The objectives of the 5-year review are to determine whether the remedies or RAs are functioning as designed and whether they remain protective of human health and the environment in accordance with the requirements outlined in the ROD or action memorandum for each OU.

RAs or Interim RAs at three OUs and associated sites were included in the 2002 5-year review:

- OU1 – Central Groundwater Plume and Site 16
- OU2 – Site 10
- OU3 – Site 7

The triggering action for the first 5-year review at MCAS Cherry Point was the initiation of the Interim RA at the OU1 Central Groundwater Plume, which was the installation of a groundwater extraction and treatment ("pump and treat") system.

The 5-year review found that, in general, the RAs or Interim RAs were functioning as designed, but it was recommended that chronic operational problems be addressed for the OU1 Central Groundwater Plume pump and treat system, the Site 16 AS/SVE system, and the OU2, Site 10 SVE system.

The RAs and Interim RAs were found to be protective of human health and the environment.

9.7 Five-Year Review—2007

The second CERCLA 5-year review was conducted at MCAS Cherry Point in 2007, and the Five-Year Review Report was finalized in February 2008 (CH2M HILL, 2008d).

RAs or Interim RAs at seven OUs and associated sites were included in the 2007 5-year review:

- OU1 – Central Groundwater Plume and Site 16
- OU2 – Site 10
- OU3 – Site 7
- OU4 – Site 4
- OU5 – Site 2
- OU6 – Site 12
- OU13 – Sites 19, 21, and 44B

The 5-year review found that, in general, the RAs or Interim RAs were functioning as designed, with the exceptions of the Interim RAs for OU1, both of which were shut down in 2005 due to performance issues, and OU2, Site 10, Soil Hotspot 2. Potential RAs for OU1 are currently being evaluated, and a Final ROD for OU1 is

scheduled to be completed in FY2013. The RA for OU2, Site 10, Soil Hotspot 2 has since been completed, in February 2012.

The RAs for the other OUs were found to be functioning as designed and are expected to be protective of human health and the environment as groundwater clean up goals are achieved over time through MNA. In the interim, exposure pathways that could result in unacceptable risks are being controlled through ICs and LUCs that prevent exposure to site contaminants.

SECTION 10

Site Management Schedules

This section presents the updated project schedules for basewide activities, for each of the sites discussed in Section 3, and for sites which will begin study, investigation, or remedial activities in FY2013. These schedules are adjusted annually in the SMP and periodically throughout the fiscal year as future site activities are further defined, partnering team priorities shift, and various administrative issues, including funding, are addressed.

Information concerning basewide activities and the OUs and sites that will be active during FY2013 is included in this section. A summary table of enforceable and potentially enforceable milestones is included as **Table 10-1** and is appended to the FFA as Appendix B.

The project schedule for basewide and site-specific activities is presented in **Table 10-2**. The project schedule includes a detailed listing of activities projected for near-term FY2013 and long-term milestones, the duration of each activity, the deliverables, and submittal dates. The review and comment periods are generally based on the government/agency review times specified in the FFA for MCAS Cherry Point. All draft primary documents have a 60-day review period. A 90-day period is allocated to respond to and reach concurrence on review comments as well as to prepare and submit the final document. However, the Cherry Point Partnering Team has the ability to adjust review periods based on team consensus, which may be reflected in **Table 10-1**.

10.1 Multi-site and Basewide Activities for FY2013

10.1.1 Preparation of the Site Management Plan Update for FY2014

The SMP will be updated for MCAS Cherry Point for FY2014 through FY2018. The SMP will meet the requirements of CERCLA as set forth in the FFA. The SMP will be used as a management tool by the MCAS Cherry Point Partnering Team and their respective organizations (NAVFAC Atlantic, MCAS Cherry Point, USEPA, and NCDENR) in the planning and scheduling of environmental remedial response activities to be conducted at MCAS Cherry Point. The SMP is a working document that is updated yearly to maintain current documentation and a summary of environmental actions at the base.

10.1.2 Preparation of the Five-Year Review – 2012

The third CERCLA five-year review will be conducted during FY2012 and completed in FY2013. RAs or Interim RAs at the following OUs and associated sites are expected to be included in the five-year review:

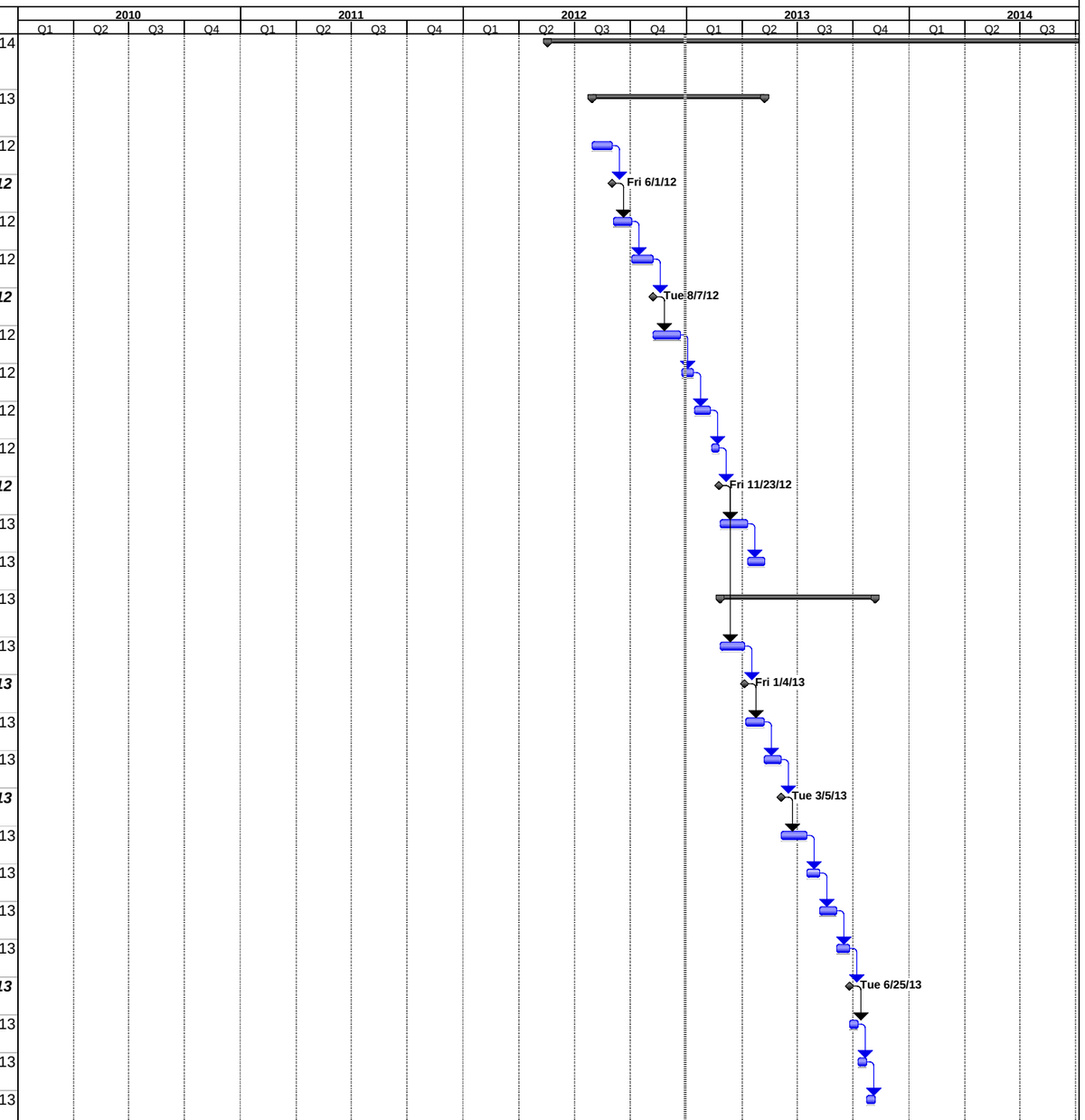
- OU1 – Central Groundwater Plume
- OU2 – Site 10
- OU3 – Site 7
- OU4 – Site 4
- OU13 – Sites 19, 21, and 44B
- OU14 – Site 90

TABLE 10-1
Enforceable/Potentially Enforceable Milestones for FY 2013 through FY 2015
FY2013 Site Management Plan
MCAS Cherry Point, North Carolina

Operable Unit or Site	Scheduled Submittal Date	FY13	FY14	FY15
OU1	12/11/2012	Final Site 83 ROD		
	1/24/2013	Draft Central Groundwater Plume Proposed Plan		
	2/6/2013	Final Site 16 Proposed Plan		
	3/5/2013	Draft Site 16 ROD		
	8/6/2013	Final Central Groundwater Plume Proposed Plan		
	8/6/2013	Final Site 16 ROD		
	10/10/2013		Draft Central Groundwater Plume ROD	
	3/27/2014		Final Central Groundwater Plume ROD	
	5/19/2014		Draft Central Groundwater Plume LTM/LUC RD	
	7/22/2014		Draft Central Groundwater Plume RD	
	10/20/2014			Final Central Groundwater Plume LTM/LUC RD
	12/23/2014			Final Central Groundwater Plume RD
Former Skeet & Trap Range #1	10/25/2012	Draft Expanded SI Report		
	3/21/2013	Final Expanded SI Report		
All	6/4/2013	Final 5-Year Review Report		

Table 10-2
Schedules and Milestones
ER Program Site Management Plan (SMP) FY13-FY17
MCAS Cherry Point, North Carolina

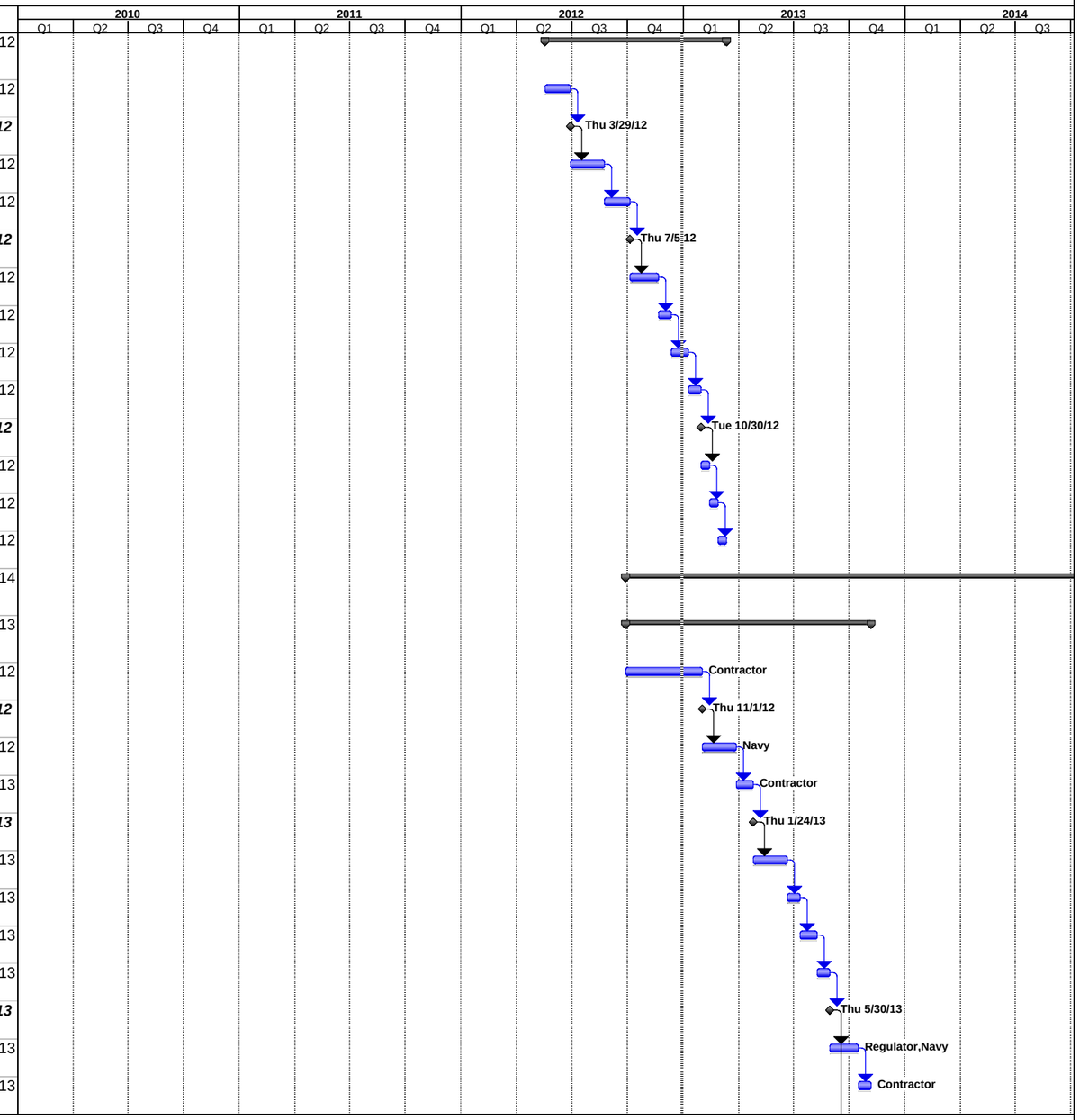
ID	Task Name	Duration	Start	Finish
1	**OU1**	743 days	Fri 2/17/12	Tue 12/23/14
2	**OU1 Site 16 PRAP**	203 days	Mon 4/30/12	Wed 2/6/13
3	Pre-Draft PRAP	25 days	Mon 4/30/12	Fri 6/1/12
4	***Submit Pre-Draft PRAP***	***0 days***	***Fri 6/1/12***	***Fri 6/1/12***
5	Review Pre-Draft PRAP	22 days	Mon 6/4/12	Tue 7/3/12
6	Draft PRAP	25 days	Wed 7/4/12	Tue 8/7/12
7	***Submit Draft PRAP***	***0 days***	***Tue 8/7/12***	***Tue 8/7/12***
8	Review Draft PRAP	33 days	Wed 8/8/12	Fri 9/21/12
9	RTC Draft PRAP	15 days	Mon 9/24/12	Fri 10/12/12
10	CMT Resolution Draft PRAP	20 days	Mon 10/15/12	Fri 11/9/12
11	Draft-Final PRAP	10 days	Mon 11/12/12	Fri 11/23/12
12	***Submit Draft-Final PRAP***	***0 days***	***Fri 11/23/12***	***Fri 11/23/12***
13	PRAP Public Comment Period	33 days	Mon 11/26/12	Wed 1/9/13
14	Finalize PRAP	20 days	Thu 1/10/13	Wed 2/6/13
15	**OU1 Site 16 ROD**	182 days	Mon 11/26/12	Tue 8/6/13
16	Pre-Draft ROD	30 days	Mon 11/26/12	Fri 1/4/13
17	***Submit Pre-Draft ROD***	***0 days***	***Fri 1/4/13***	***Fri 1/4/13***
18	Review Pre-Draft ROD	22 days	Mon 1/7/13	Tue 2/5/13
19	Draft ROD	20 days	Wed 2/6/13	Tue 3/5/13
20	***Submit Draft ROD***	***0 days***	***Tue 3/5/13***	***Tue 3/5/13***
21	Review Draft ROD	30 days	Wed 3/6/13	Tue 4/16/13
22	RTC Draft ROD	15 days	Wed 4/17/13	Tue 5/7/13
23	CMT Resolution Draft ROD	20 days	Wed 5/8/13	Tue 6/4/13
24	Draft-Final ROD	15 days	Wed 6/5/13	Tue 6/25/13
25	***Submit Draft-Final ROD***	***0 days***	***Tue 6/25/13***	***Tue 6/25/13***
26	State Approval Letter	10 days	Wed 6/26/13	Tue 7/9/13
27	ROD Signature (General)	10 days	Wed 7/10/13	Tue 7/23/13
28	ROD Signature (EPA)	10 days	Wed 7/24/13	Tue 8/6/13



Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks		Deadline	

Table 10-2
Schedules and Milestones
ER Program Site Management Plan (SMP) FY13-FY17
MCAS Cherry Point, North Carolina

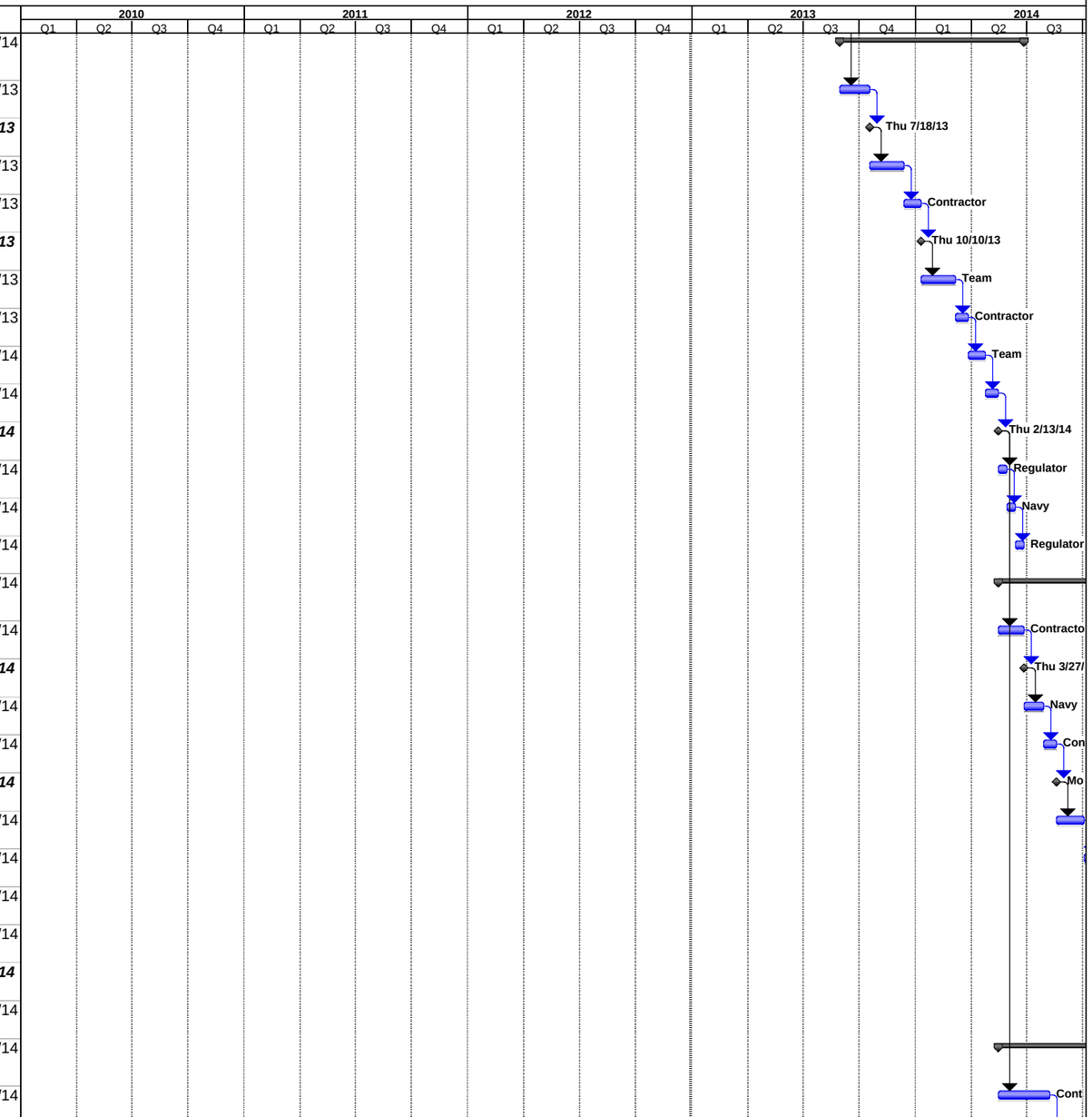
ID	Task Name	Duration	Start	Finish
29	**OU1 Site 83 ROD**	213 days	Fri 2/17/12	Tue 12/11/12
30	Pre-Draft ROD	30 days	Fri 2/17/12	Thu 3/29/12
31	***Submit Pre-Draft ROD***	***0 days***	***Thu 3/29/12***	***Thu 3/29/12***
32	Review Pre-Draft ROD	40 days	Fri 3/30/12	Thu 5/24/12
33	Draft ROD	30 days	Fri 5/25/12	Thu 7/5/12
34	***Submit Draft ROD***	***0 days***	***Thu 7/5/12***	***Thu 7/5/12***
35	Review Draft ROD	33 days	Fri 7/6/12	Tue 8/21/12
36	RTC Draft ROD	15 days	Wed 8/22/12	Tue 9/11/12
37	CMT Resolution Draft ROD	20 days	Wed 9/12/12	Tue 10/9/12
38	Draft-Final ROD	15 days	Wed 10/10/12	Tue 10/30/12
39	***Submit Draft-Final ROD***	***0 days***	***Tue 10/30/12***	***Tue 10/30/12***
40	State Approval Letter	10 days	Wed 10/31/12	Tue 11/13/12
41	ROD Signature (General)	10 days	Wed 11/14/12	Tue 11/27/12
42	ROD Signature (EPA)	10 days	Wed 11/28/12	Tue 12/11/12
43	**OU1 Central Groundwater Plume**	648 days	Fri 6/29/12	Tue 12/23/14
44	**OU1 Central GW Plume PRAP**	288 days	Fri 6/29/12	Tue 8/6/13
45	Pre-Draft PRAP	90 days	Fri 6/29/12	Thu 11/1/12
46	***Submit Pre-Draft PRAP***	***0 days***	***Thu 11/1/12***	***Thu 11/1/12***
47	Review Pre-Draft PRAP	40 days	Fri 11/2/12	Thu 12/27/12
48	Draft PRAP	20 days	Fri 12/28/12	Thu 1/24/13
49	***Submit Draft PRAP***	***0 days***	***Thu 1/24/13***	***Thu 1/24/13***
50	Review Draft PRAP	40 days	Fri 1/25/13	Thu 3/21/13
51	RTC Draft PRAP	15 days	Fri 3/22/13	Thu 4/11/13
52	CMT Resolution Draft PRAP	20 days	Fri 4/12/13	Thu 5/9/13
53	Draft-Final PRAP	15 days	Fri 5/10/13	Thu 5/30/13
54	***Submit Draft-Final PRAP***	***0 days***	***Thu 5/30/13***	***Thu 5/30/13***
55	PRAP Public Comment Period	33 days	Fri 5/31/13	Tue 7/16/13
56	Finalize PRAP	15 days	Wed 7/17/13	Tue 8/6/13



Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks		Deadline	

Table 10-2
Schedules and Milestones
ER Program Site Management Plan (SMP) FY13-FY17
MCAS Cherry Point, North Carolina

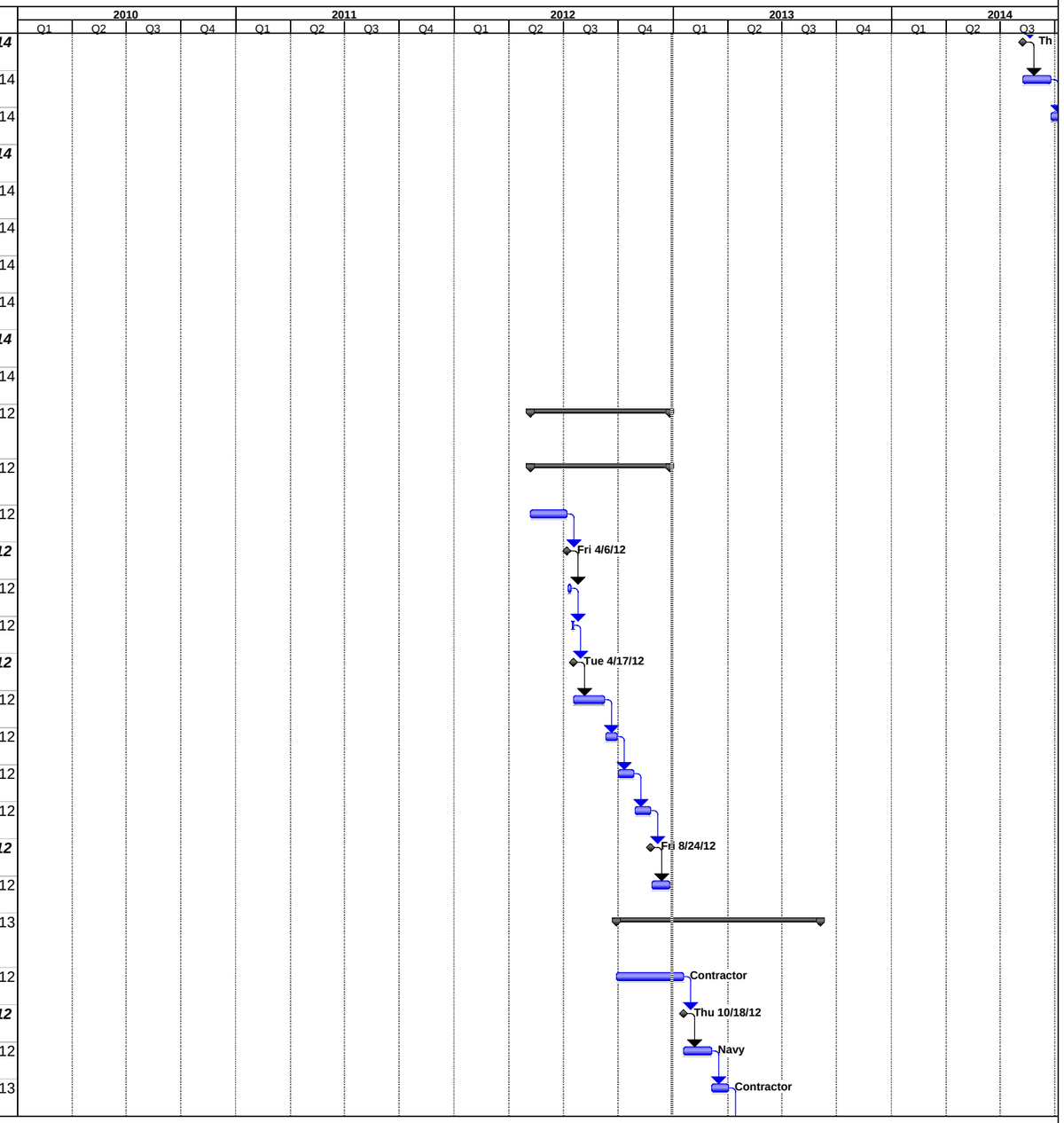
ID	Task Name	Duration	Start	Finish
57	**OU1 Central GW Plume ROD**	215 days	Fri 5/31/13	Thu 3/27/14
58	Pre-Draft ROD	35 days	Fri 5/31/13	Thu 7/18/13
59	***Submit Pre-Draft ROD***	***0 days***	***Thu 7/18/13***	***Thu 7/18/13***
60	Review Pre-Draft ROD	40 days	Fri 7/19/13	Thu 9/12/13
61	Draft ROD	20 days	Fri 9/13/13	Thu 10/10/13
62	***Submit Draft ROD***	***0 days***	***Thu 10/10/13***	***Thu 10/10/13***
63	Review Draft ROD	40 days	Fri 10/11/13	Thu 12/5/13
64	RTC Draft ROD	15 days	Fri 12/6/13	Thu 12/26/13
65	CMT Resolution Draft ROD	20 days	Fri 12/27/13	Thu 1/23/14
66	Draft-Final ROD	15 days	Fri 1/24/14	Thu 2/13/14
67	***Submit Draft-Final ROD***	***0 days***	***Thu 2/13/14***	***Thu 2/13/14***
68	State Approval Letter	10 days	Fri 2/14/14	Thu 2/27/14
69	ROD Signature (General)	10 days	Fri 2/28/14	Thu 3/13/14
70	ROD Signature (EPA)	10 days	Fri 3/14/14	Thu 3/27/14
71	**OU1 LTM/LUC RD**	177 days	Fri 2/14/14	Mon 10/20/14
72	Pre-Draft RD WP	30 days	Fri 2/14/14	Thu 3/27/14
73	***Submit Pre-Draft RD WP***	***0 days***	***Thu 3/27/14***	***Thu 3/27/14***
74	Review Pre-Draft RD WP	22 days	Fri 3/28/14	Mon 4/28/14
75	Draft RD WP	15 days	Tue 4/29/14	Mon 5/19/14
76	***Submit Draft RD WP***	***0 days***	***Mon 5/19/14***	***Mon 5/19/14***
77	Review Draft RD WP	33 days	Tue 5/20/14	Thu 7/3/14
78	RTC Draft RD WP	15 days	Fri 7/4/14	Thu 7/24/14
79	CMT Resolution Draft RD WP	20 days	Fri 7/25/14	Thu 8/21/14
80	Draft-Final RD WP	20 days	Fri 8/22/14	Thu 9/18/14
81	***Submit Draft-Final RD WP***	***0 days***	***Thu 9/18/14***	***Thu 9/18/14***
82	Approve Final RD WP	22 days	Fri 9/19/14	Mon 10/20/14
83	**OU1 RD**	223 days	Fri 2/14/14	Tue 12/23/14
84	Pre-Draft RD	60 days	Fri 2/14/14	Thu 5/8/14



Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks		Deadline	

Table 10-2
Schedules and Milestones
ER Program Site Management Plan (SMP) FY13-FY17
MCAS Cherry Point, North Carolina

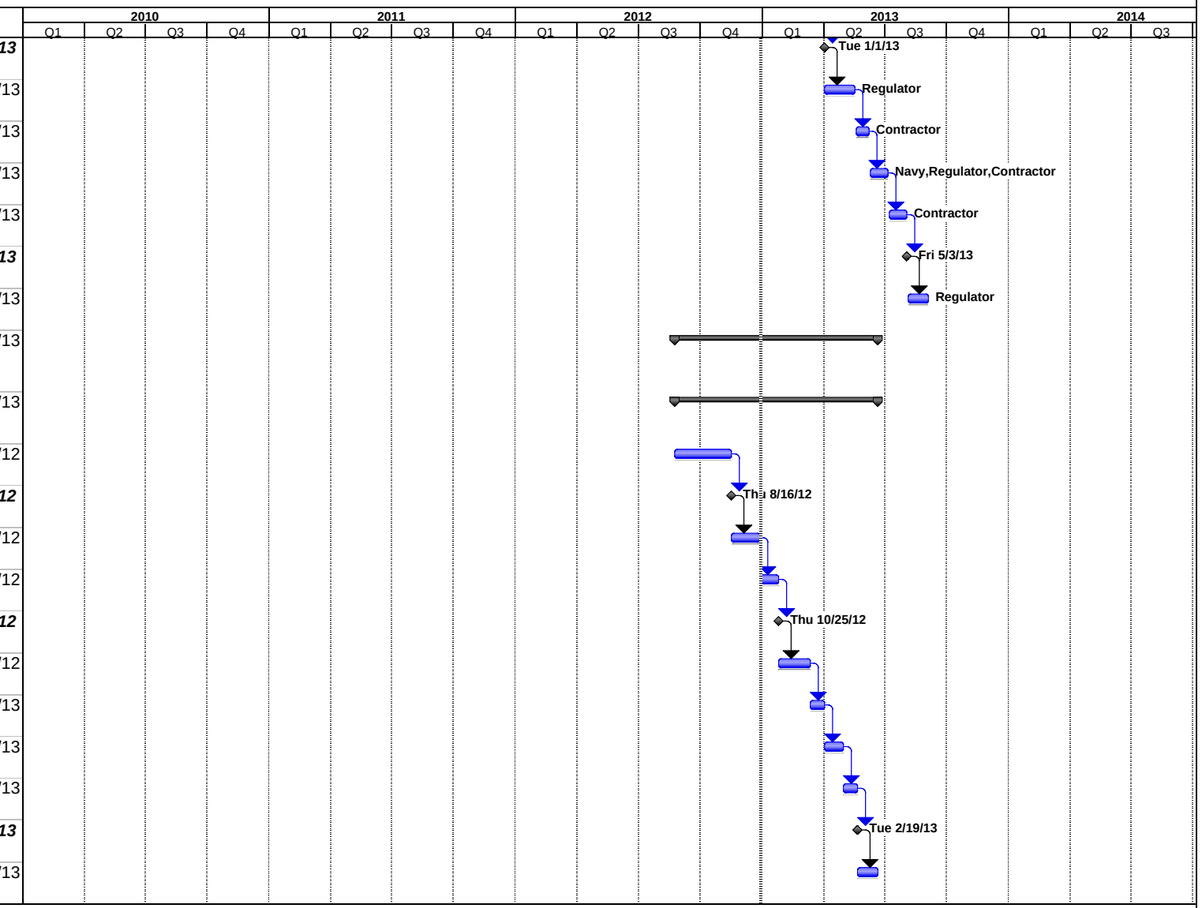
ID	Task Name	Duration	Start	Finish
85	***Submit Pre-Draft RD***	***0 days***	***Thu 5/8/14***	***Thu 5/8/14***
86	Review Pre-Draft RD	33 days	Fri 5/9/14	Tue 6/24/14
87	Draft RD	20 days	Wed 6/25/14	Tue 7/22/14
88	***Submit Draft RD***	***0 days***	***Tue 7/22/14***	***Tue 7/22/14***
89	Review Draft RD	33 days	Wed 7/23/14	Fri 9/5/14
90	RTC Draft RD	15 days	Mon 9/8/14	Fri 9/26/14
91	CMT Resolution Draft RD	20 days	Mon 9/29/14	Fri 10/24/14
92	Draft-Final RD	20 days	Mon 10/27/14	Fri 11/21/14
93	***Submit Draft Final RD***	***0 days***	***Fri 11/21/14***	***Fri 11/21/14***
94	Approve Remedial Design	22 days	Mon 11/24/14	Tue 12/23/14
95	**OU14**	167 days	Mon 2/6/12	Tue 9/25/12
96	**OU14 Ongoing LTM**	167 days	Mon 2/6/12	Tue 9/25/12
97	Pre-Draft LTM Report	45 days	Mon 2/6/12	Fri 4/6/12
98	***Submit Pre-Draft LTM Report***	***0 days***	***Fri 4/6/12***	***Fri 4/6/12***
99	Review Pre-Draft LTM Report	5 days	Mon 4/9/12	Fri 4/13/12
100	Draft LTM Report	2 days	Mon 4/16/12	Tue 4/17/12
101	***Submit Draft LTM Report***	***0 days***	***Tue 4/17/12***	***Tue 4/17/12***
102	Review Draft LTM Report	38 days	Wed 4/18/12	Fri 6/8/12
103	RTC DraftLTM Report	15 days	Mon 6/11/12	Fri 6/29/12
104	CMT Resolution Draft LTM Report	20 days	Mon 7/2/12	Fri 7/27/12
105	Draft-Final LTM Report	20 days	Mon 7/30/12	Fri 8/24/12
106	***Submit Draft-Final LTM Report***	***0 days***	***Fri 8/24/12***	***Fri 8/24/12***
107	Approve LTM Report	22 days	Mon 8/27/12	Tue 9/25/12
108	**MCAS Cherry Point Five Year Review**	243 days	Fri 6/29/12	Tue 6/4/13
109	Pre-Draft Five Year Review	80 days	Fri 6/29/12	Thu 10/18/12
110	***Submit Pre-Draft Five Year Review***	***0 days***	***Thu 10/18/12***	***Thu 10/18/12***
111	Review Pre-Draft Five Year Review	33 days	Fri 10/19/12	Tue 12/4/12
112	Draft Five Year Review	20 days	Wed 12/5/12	Tue 1/1/13



Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks		Deadline	

Table 10-2
Schedules and Milestones
ER Program Site Management Plan (SMP) FY13-FY17
MCAS Cherry Point, North Carolina

ID	Task Name	Duration	Start	Finish
113	***Submit Draft Five Year Review***	***0 days***	***Tue 1/1/13***	***Tue 1/1/13***
114	Review Draft Five Year Review	33 days	Wed 1/2/13	Fri 2/15/13
115	RTC Five Year Review	15 days	Mon 2/18/13	Fri 3/8/13
116	CMT Resolution Five Year Review	20 days	Mon 3/11/13	Fri 4/5/13
117	Draft-Final Five Year Review	20 days	Mon 4/8/13	Fri 5/3/13
118	***Submit Draft-Final Five Year Review***	***0 days***	***Fri 5/3/13***	***Fri 5/3/13***
119	Approve Five Year Review	22 days	Mon 5/6/13	Tue 6/4/13
120	**MRP: Former Skeet & Trap Range #1**	215 days	Fri 5/25/12	Thu 3/21/13
121	**Expanded SI Report (Including WSCD)**	215 days	Fri 5/25/12	Thu 3/21/13
122	Pre-Draft Site Inspection (SI) Report	60 days	Fri 5/25/12	Thu 8/16/12
123	***Submit Pre-Draft SI Report***	***0 days***	***Thu 8/16/12***	***Thu 8/16/12***
124	Review Pre-Draft SI Report	30 days	Fri 8/17/12	Thu 9/27/12
125	Draft SI Report	20 days	Fri 9/28/12	Thu 10/25/12
126	***Submit Draft SI Report***	***0 days***	***Thu 10/25/12***	***Thu 10/25/12***
127	Review Draft SI Report	33 days	Fri 10/26/12	Tue 12/11/12
128	RTC Draft SI Report	15 days	Wed 12/12/12	Tue 1/1/13
129	CMT Resolution Draft SI Report	20 days	Wed 1/2/13	Tue 1/29/13
130	Final SI Report	15 days	Wed 1/30/13	Tue 2/19/13
131	***Submit Final SI Report***	***0 days***	***Tue 2/19/13***	***Tue 2/19/13***
132	Approve Final SI Report	22 days	Wed 2/20/13	Thu 3/21/13



Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks		Deadline	

SECTION 11

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