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FINAL

SITE MANAGEMENT PLAN
FOR
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA
FISCAL YEAR 1992

A/E CONTRACT N62470-90-B-7629
TASK ORDER NO. 5

PREPARED FOR:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA

JANUARY 1992

HALLIBURTON NUS
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1.0 INTRODUCTION

Marine Corps Base (MCB) Camp Lejeune (Facility) is located in Onslow County in eastern North Carolina (see Figure 1-1). The facility currently covers approximately 170 square miles and is bisected by the New River. The Atlantic Ocean forms the southeastern boundary of the facility. The western and northwestern boundaries are U.S. 17 and State Road 24, respectively. The City of Jacksonville is located immediately northwest of the facility. Within 15 miles are three large, publicly-owned tracts of land: Croatan National Forest, Hoffman Forest, and Camp Davis Forest. The remaining land use surrounding the facility is agricultural. Estuaries along the coast support commercial fishing. Tourism and residential resort areas have stimulated the regional economy. The facility is located in the Atlantic Coastal Plain on generally flat topography.

MCB Camp Lejeune was placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) effective November 4, 1989 (54 Federal Register 41015, October 4, 1989). The facility has been actively involved in the Navy Assessment and Control of Installation Pollutants (NACIP) Program since 1983. The initial stage of the NACIP Program was the Initial Assessment Study (IAS). The IAS included 76 potentially contaminated sites and identified 22 sites, or areas of contamination (AOC), that warranted further investigation. During the investigation of the AOCs, an additional AOC (Site A) was identified.

Based on the recommendations of the IAS, RI/FS activities at MCB Camp Lejeune were initiated in 1984. The first round of sampling was conducted beginning in July 1984. During the investigation, 75 groundwater, 56 soil, 7 surface water, 8 sediment, and 2 fish tissue samples were collected and analyzed. An additional round of sampling was conducted during 1986 and 1987. During this sampling episode, 113 wells were sampled, and 54 soil, 44 surface water, and 41 sediment samples were collected and analyzed. In 1988, an investigation was conducted on the hydrogeology and extent of fuel leakage at Site 22 (Industrial Area Tank Farm).

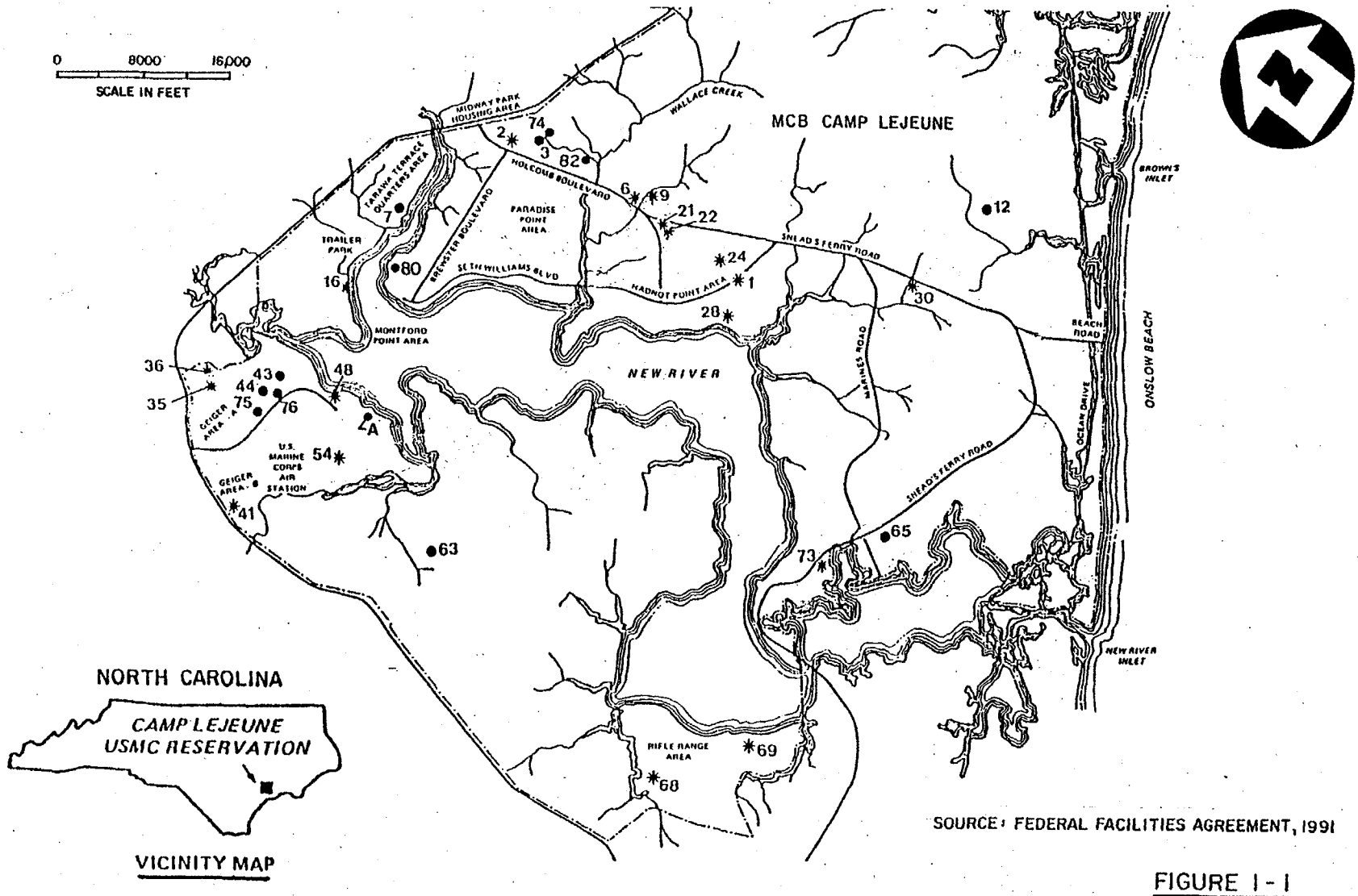
In December 1989, the draft Federal Facility Agreement (FFA) was prepared and covered a list of 23 sites. The Hadnot Point Industrial Area, not identified in the FFA as a site, has been designated Site 78 and should be added to the FFA list.

The existing list of 23 sites was developed based upon the results of previous investigations. Site Inspections (SIs) are scheduled to be performed at several additional sites. If these sites warrant

further investigation based on the SI results, they will be added to the FFA RI/FS list. The FFA was signed February 13, 1991.

This Fiscal Year 1992 Site Management Plan (SMP) is one of the primary documents identified in the FFA. The SMP documents the decisions and evaluations made during the project planning and scoping process. The SMP also includes proposed deadlines for completion of draft Primary Documents, as specified in the FFA, to be submitted during the next fiscal year. No later than June 1 of each year, an amendment to the SMP will be submitted that proposes deadlines for completion of each of the draft Primary Documents to be submitted during the next fiscal year.

The Site Community Relations Plan (CRP) is also a Primary Document. A CRP for MCB Camp Lejeune was submitted to EPA and DEHNR in September 1990. This CRP was inappropriately titled as applying to a specific investigation. MCB Camp Lejeune submitted a revised cover sheet to this CRP in June 1991. The cover sheet specified the CRP as being generic to all MCB Camp Lejeune installation restoration work. The CRP provides guidelines for community relations activities implemented by the Marine Corps to keep the concerned public informed on the response action activities at MCB Camp Lejeune.



NORTH CAROLINA

VICINITY MAP

SOURCE: FEDERAL FACILITIES AGREEMENT, 1991

FIGURE 1-1

SITE LOCATION MAP
MCB CAMP LEJEUNE, NC

NUS CORPORATION

2.0 RI/FS SITES

The list of RI/FS sites at MCB Camp Lejeune presented in the FFA as requiring further action is shown in Table 2-1, along with the dates the sites were in use and the material disposed of at the site.

Table 2-2 lists potentially contaminated RI/FS sites requiring further action, along with the proposed activity and the priority for work (fiscal year of project start). These sites were prioritized according to the following criteria:

- Potential for groundwater contamination
  - Depth to aquifer of concern
  - Permeability of unsaturated zone
  - Physical state of wastes at time of disposal (liquid, solid, etc.)
  - Waste toxicity/persistence
  - Waste quantity
  - Groundwater use
  - Distance to nearest drinking water supply well

- Proximity to receptors
  - Workers on base
  - Residential areas
  - Recreational areas

- Contaminants verified
  - Identified presence of contaminants
  - Contaminant concentrations

- Potential for aquatic stress
  - Distance to nearest surface water or wetland
  - Physical state of wastes at time of disposal
  - Waste toxicity/persistence
  - Waste quantity
  - Runoff characteristics (site slope and intervening terrain)

TABLE 2-1

DISPOSAL SITES REQUIRING RI/FS ACTIVITIES
MCB CAMP LEJEUNE, NORTH CAROLINA

Site No.	Site Description	Dates Used	Material Deposited
1	French Creek Liquids Disposal Area	Late 1940s to mid-1970s	Waste battery acid, POL
2	Former Nursery/Day-Care Center	1945-1958	Various pesticides
6	Storage Lots 201 and 203	1940s-Present	Metals, DDT, PCBs
9	Firefighting Training Pit at Piney Green Road	1960s-Present	JP-4, JP-5, solvents
16	Montford Point Burn Dump (1958-1972)	1958-1972	Garbage, waste oils, asbestos
21	Transformer Storage Lot 140	1950-1977	PCB spill, DDT, transformer oil
22	Industrial Area Tank Farm	1979	Fuel (leaks)
24	Industrial Area Fly Ash Dump	1940s-1980.	Fly ash and cinders, WTP sludge, STP sludge, construction debris
28	Hadnot Point Burn Dump	1946-1971	Solid wastes, industrial wastes, garbage, trash, oil-based paint
30	Sneads Ferry Road-Fuel Tank Sludge Area	1970	Sludge from fuel storage tank, tetraethyl lead and related compounds

TABLE 2-1
DISPOSAL SITES REQUIRING RI/FS ACTIVITIES
MCB CAMP LEJEUNE, NORTH CAROLINA
PAGE TWO

Site No.	Site Description	Dates Used	Material Deposited
35	Camp Geiger Area Fuel Farm	1957-1958	MOGAS (Spill)
36	Camp Geiger Area Dump Near Sewage Treatment Plant	Late 1940s-late 1950s	Mixed industrial and municipal solid waste
41	Camp Geiger Dump Near Former Trailer Park	Approx. 1946-1970	Mixed industrial and municipal wastes, POL, solvents, old batteries, Mirex, ordnance
48	MCAS New River Mercury Dump Site	1956-1966	Dumping of approximately 1 gallon mercury yearly for approximately 10 years
69	Rifle Range Chemical Dump	Mid 1950s-1976	Chemical agent test kits, Malathion, DDT, PCBs
73	Courthouse Bay Liquids Disposal Area	1946-1977	Waste battery acid, POL
74	Mess Hall Grease Disposal Area	Early 1950s 1960s	Pesticides, PCBs
78 (1)	Hadnot Point (Industrial Area)	1940s-1981	Fuel, solvents

(1) Operable Unit No. 1 - Not specifically mentioned as a site in the IAS, but included for completeness.

TABLE 2-2

RI/FS SITES
MCB CAMP LEJEUNE, NORTH CAROLINA

Site		Proposed Activity				Prioritization Criteria				Fiscal Year (Project Start)	Comment
No.	Description	No Action	Site Inspection	RI/FS	Remedial Action	Groundwater Contamination Potential	Proximity to Receptors	Contaminants Verified	Aquatic Stress Potential		
1	French Creek Liquids Disposal Area			X		X		X		1996	
2	Former Nursery/Day Care Center			X		X	(a)	X		1993	
6	Storage Lots 201 and 203			X		X	(a)	X	X	1991 (1)	
9	Firefighting Area at Piney Green Road (2)			X		X	(a)	X		1992	FY 92 RI/FS - Source study of soil contamination.
16	Montford Point Burn Dump			X		X	(a)	X	X	1994	
21	Transformer Storage Lot 140 (2)			X		X		X		1992	FY 92 RI/FS - Source study of soil contamination.
22	Industrial Area Tank Farm (2)(3)			X	X (5)	X	(a)	X		1991 (5) 1992 (4)	FY 92 RI/FS - Source study of soil contamination.
24	Industrial Area Fly Ash Dump(2)			X		X		X	X	1992	FY 92 RI/FS - Source study of soil contamination.
28	Hadnot Point Burn Dump			X		X	(c)	X	X	1993	
30	Sneads Ferry Road - Fuel Tank Sludge Area			X		X				1996	Some concern of laboratory problem with analysis
35	Camp Geiger Area Fuel Farm (3)			X	X (5)	X	(a)	X	X	1991 (5) 1995 (4)	
36	Camp Geiger Area Dump Near Sewage Treatment Plant			X		X		X	X	1995	
41	Camp Geiger Dump Near Former Trailer Park			X		X		X	X	1995	Explosive ordnance may have been buried at this site.

TABLE 2-2
RI/FS SITES
MCB CAMP LEJEUNE, NORTH CAROLINA
PAGE TWO

Site		Proposed Activity				Prioritization Criteria				Fiscal Year (Project Start)	Comment
No.	Description	No Action	Site Inspection	RI/FS	Remedial Action	Groundwater Contamination Potential	Proximity to Receptors	Contaminants Verified	Aquatic Stress Potential		
48	MCAS New River Mercury Dump Site			X		X		X	X	1991 (1)	
69	Rifle Range Chemical Dump			X		X		X	X	1991 (1)	Explosive ordnance may have been buried at this site.
73	Courthouse Bay Liquids Disposal Area			X		X		X	X	1994	
74	Mess Hall Grease Pit Area			X		X	(b)	X	X	1993	Pesticide contamination.
78	Hadnot Point Industrial Area (Operable Unit No. 1)			X	X (6)	X	(a)	X	X	1991 (4) 1992 (7)	Development of project plans for Interim Remedial Action to commence in FY 1991.

(1) Ongoing
(2) Part of Hadnot Point Industrial Area
(3) Also a UST Site
(4) RI/FS
(5) Product Recovery
(6) Interim Action
(7) Remedial Design
(a) Workers on base
(b) Residential areas
(c) Recreational areas

Table 2-3 shows proposed RI/FS activities by fiscal year project start.

Table 2-4 lists sites identified in the FFA as requiring no further action.

Following are brief descriptions of potentially contaminated RI/FS sites requiring further action. For more specific information, refer to the "Site Summary Report" (ESE, September 1990), which presents a summary of the environmental data generated by the various field investigations conducted at 22 sites.

2.1 SITE 1 - FRENCH CREEK LIQUIDS DISPOSAL AREA

This AOC is located on both the north and south sides of Main Service Road at the western edge of the Gun Park Area and Force Troops Complex. The total area for the AOC is approximately 7 to 8 acres. Site 1 has been used by many different Marine organizations since the 1940s. Liquid wastes from vehicle maintenance activities were poured on the ground as part of routine operations.

Batteries and used battery acid were also disposed of at this location. Suspected quantities of waste are estimated to be 5,000 to 20,000 gallons of waste petroleum, oil, and lubricants (POL) and 1,000 to 10,000 gallons of battery acid.

2.2 SITE 2 - FORMER NURSERY/DAY-CARE CENTER

From 1945 to 1958 this building was used for the storing, handling, and dispensing of pesticides. The building at this location was later used as a children's day-care center. Chemicals known to have been used include chlordane, DDT, diazinon, and 2,4-D. Chemicals known to have been stored on site include dieldrin, lindane, malathion, silvex, and 2,4,5-TP. Areas of suspected contamination are the fenced playground, mixing pad, wash pad, and railroad drainage ditch. Contamination is believed to have occurred as a result of small spills, washout, and excess disposal. A preliminary soil sampling investigation conducted at this AOC in 1982 indicated the presence of DDE, DDD, DDT, and chlordane. Based on these results, the day-care activities were moved to another location.

2.3 SITE 6 - STORAGE LOTS 201 AND 203

Storage Lots 201 and 203 are located on Holcomb Boulevard between Wallace and Bearhead Creeks. Lot 201 is estimated to be approximately 25 acres in size, and Lot 203 is approximately 46 total acres.

TABLE 2-3

PROPOSED RI/FS ACTIVITIES BY FISCAL YEAR PROJECT START[1]
MCB CAMP LEJEUNE, NORTH CAROLINA

Site No.	Description	Proposed Activity	Fiscal Year
6	Storage Lots 201 and 203	RI/FS	1991
48	MCAS New River Mercury Dump Site	RI/FS	1991
69	Rifle Range Chemical Dump	RI/FS	1991
78	HPIA Shallow Aquifer (Operable Unit No. 1)	RD[2]	1991
78	HPIA Shallow Soils and Deep Aquifer (Operable Unit No. 1)	RI/FS[3]	1991
9	Firefighting Area at Piney Green Road	RI/FS	1992
21	Transformer Storage Lot 140	RI/FS	1992
22	Industrial Area Tank Farm	RI/FS	1992
24	Industrial Area Fly Ash Dump	RI/FS	1992
2	Former Nursery/Day Care Center	RI/FS	1993
28	Hadnot Point Burn Dump	RI/FS	1993
74	Mess Hall Grease Pit Area	RI/FS	1993
16	Montford Point Burn Dump	RI/FS	1994
73	Courthouse Bay Liquids Disposal Area	RI/FS	1994
35	Camp Geiger Area Fuel Farm	RI/FS	1995
36	Camp Geiger Area Dump near STP	RI/FS	1995
41	Camp Geiger Dump - Former Trailer Park	RI/FS	1995
1	French Creek Liquids Disposal Area	RI/FS	1996
30	Sneads Ferry Road Fuel Tank Sludge Area	RI/FS	1996

(1) Project start is initiation of development of project plans for proposed activity.
(2) Interim action.
(3) Draft RI/FS/RA reports were submitted on August 23, 1991.

TABLE 2-4

NO ACTION SITES
MCB CAMP LEJEUNE, NORTH CAROLINA

Site Number	Description
4	Sawmill Road Construction Debris Dump
5	Piney Green Road
8	Flammable Storage Warehouse, Building TP-451 and TP-452
10	Original Base Dump
11	Pest Control Shop
13	Golf Course Construction Dump Site
14	Knox Area Rip-Rap
15	Montford Point Dump Site (1948-1958)
17	Montford Point Area Rip-Rap
18	Watkins Village (E) Site
19	Naval Research Laboratory Dump
20	Naval Research Laboratory Incinerator
23	Roads and Grounds, Building 1105
25	Base Incinerator
26	Coal Storage Area
27	Naval Hospital Area Rip-Rap
29	Base Sanitary Landfill
31	Engineering Stockade-G-4 Range Road
32	French Creek
33	Onslow Beach Road
34	Ocean Drive
37	Camp Geiger Surface Dump
38	Camp Geiger Construction Dump
39	Camp Geiger Construction Slab Dump
40	Camp Geiger Area Borrow Pit
42	Building 705, BOQ Dump
45 (1)	Campbell Street Underground Fuel Storage Area
46	MCAS Main Gate Dump
47	MCAS Rip-Rap Near Stick Creek
49	MCAS Suspected Minor Dump

TABLE 2-4
NO ACTION SITES
MCB CAMP LEJEUNE, NORTH CAROLINA
PAGE TWO

Site Number	Description
50	MCAS Small-Craft Berthing Rip-Rap
51	MCAS Football Field
52 (1)	MCAS Direct Fuel Depot
53	MCAS Warehouse Building 3525 Area (Oiled Roads)
55	Air Station East Perimeter Dump
56	MCAS Oiled Roads to Marina
57	Runway 36 Dump
58	MCAS Tank Training Area
60	EOD K-326 Range
61	Rhodes Point Road Dump
62	Race Course Area Dump
64	Marines Road - Sneads Ferry Road MOGAS Spill
66	AMTRAC Landing Site and Storage Area
70	Oak Grove Field - Surface Dump
71	Oak Grove Buried Dump
72	Oak Grove Coal Pile

(1) UST sites covered under authority of North Carolina DEHNR.

These lots have a long history of various uses, including disposal and storage. The land surface is flat and unpaved, and surface soils have been moved about as a result of regrading and equipment movement. The site was and still is used to store hazardous materials. DDT is reported to have been disposed of at Lot 203 when it served as a waste disposal area in the 1940s. Transformers containing PCBs have also been stored at this site. No spills or leaks have been reported.

2.4 SITE 9 - FIREFIGHTING TRAINING PIT AT PINEY GREEN ROAD

This 2-acre site is located between Piney Green Road and Holcomb Boulevard, south of Bearhead Creek. This AOC has been used for firefighting training exercises from the 1960s to the present. Until 1981, the fire training activities were carried out in an unlined pit. Flammable liquids, including used oil, solvents, and contaminated fuels (nonleaded), were burned in the pit. An oil-water separator has been installed at the site as a means of pollution control.

2.5 SITE 16 - MONTFORD POINT BURN DUMP

Site 16 was opened about 1958 and was closed in 1972, although unauthorized dumping subsequently occurred. The site contains building debris, garbage, tires, and waste oils. The quantity of these wastes is not known, but only a small amount of oil disposal is suspected. Materials have been dumped on the surface and included asbestos insulation material for pipes. The asbestos on the surface has been removed from this 4-acre site.

2.6 SITE 21 - TRANSFORMER STORAGE LOT 140

This AOC is located between Ash Street and Sneads Ferry Road on Center Road. A transformer oil pit was located in the northeastern end of Lot 140 across the railroad tracks from Building 702. The entire lot is approximately 220 feet by 890 feet with the dimensions of the pit measuring 25 to 30 feet long by 6 feet wide by 8 feet deep.

Lot 140 was used from 1958 to 1977, for pesticide mixing and as a cleaning area for pesticide application equipment. The mixing area for the pesticides is believed to have been the southeast corner of the lot. Pesticide contamination possibly occurred as a result of small spills, washout, and excess disposal. In 1977, before activities were moved to a different location, washout was estimated to be about 350 gallons per week of overland discharge.

In 1950 and 1951, an onsite pit was used as a drainage receptor for oil from transformers. Sand was occasionally placed in the pit when oil was found standing in the pit bottom. The total quantity of oil drained in this manner is unknown.

2.7 SITE 22 - INDUSTRIAL AREA TANK FARM

The Industrial Area Tank Farm is located east of the intersection of Gibb Road and Ash Streets. The tank farm covers an area of approximately 4 acres and contains 14 underground storage tanks and one above-ground tank. The fuel farm was constructed in the 1940s, and several fuel leaks have occurred throughout the years, the latest being a 100-gallon leak of diesel fuel in 1981. In 1979, a fuel leak of an estimated 20,000 to 30,000 gallons of diesel and unleaded fuel occurred in an underground line near the tank truck loading facility.

2.8 SITE 24 - INDUSTRIAL AREA FLY ASH DUMP

This AOC is located south and east of the intersection of Birch and Duncan Streets. Four separate disposal locations were investigated as potential areas of contamination. Site 24 was used for the disposal of fly ash, cinders, solvents, used paint stripping compounds, sewage sludge, and water treatment sludge from the late 1940s to 1980. Approximately 20 to 25 acres in size, the site lies adjacent to upstream portions of Cogdels Creek.

2.9 SITE 28 - HADNOT POINT BURN DUMP

The Hadnot Point Burn Dump is located east of the Mainside Sewage Treatment Plant and is on both sides of Cogdels Creek. A variety of solid wastes, including mixed industrial waste, trash, garbage, oil-based paint, and refuse, was burned and subsequently covered with dirt on this 23-acre disposal area, which was in operation from 1946 to 1971. Upon its closure in 1971, the surface was graded, and grass was planted. The volume of fill is estimated at 185,000 to 379,000 cubic yards. Since the waste was burned, no approximation of the remaining amount of specific substances can reasonably be made. The site is currently used as a recreational area, including a stocked fishing pond.

2.10 SITE 30 - SNEADS FERRY ROAD FUEL TANK SLUDGE AREA

The Sneads Ferry Road Fuel Tank Sludge Area is located along a tank trail that intersects Sneads Ferry Road from the west, about 6,000 feet south of the intersection with Marines Road. The site is located approximately 1,500 feet east of French Creek. In 1970, sludge from fuel storage tanks storing leaded gasoline (containing tetraethyl lead and related compounds) and tank washout waters were disposed

of at the site by a private contractor. It is estimated that, at a minimum, 600 gallons of sludge or tank bottom deposits were dumped at the site. Two 12,000-gallon tanks were pumped out while the type of fuel stored was changed. The 600-gallon estimate is based on tank capacity below the tank outflow ports. Additional washout water may also have been present. Additional information suggests that the site had also been used for similar wastes from other tanks. Composition of the sludge and/or washout is unknown and may vary from containing substantial amounts of tetraethyl lead to containing mostly cleaning compounds.

2.11 SITE 35 - CAMP GEIGER AREA FUEL FARM

Camp Geiger Area Fuel Farm is located north of the intersection of G and Fourth Streets, approximately 400 feet southwest of Brinson Creek. This 2,500-square-foot AOC was used in 1957 and 1958 for storing and pumping fuel. Mogas was released to the soil through a leak in an underground line near an above-ground storage tank and tank pad. The Camp Lejeune Fire Department has estimated the amount of fuel released to be in the thousands of gallons. Exact quantities released cannot be determined because the records were destroyed. The spill migrated east and northeast towards and into Brinson Creek. Fuel at the surface of the shallow aquifer was disposed of by digging holes to the water table and igniting the fuel. Fuel which contaminated Brinson Creek was also ignited and burned.

2.12 SITE 36 - CAMP GEIGER AREA DUMP NEAR SEWAGE TREATMENT PLANT (STP)

The Camp Geiger Area Dump is located east of the Camp Geiger STP approximately 200 feet on the south side of Brinson Creek, downstream of Site 35. An unnamed ditch is located less than 100 feet southeast of the filled area. Site 36 was used for the disposal of municipal wastes and mixed industrial wastes including garbage, trash, waste oils, solvents, and hydraulic fluids from the air station from the late 1940s to the late 1950s. Most of the material was first burned and then buried. However, some unburned material was buried. According to interviews conducted during the IAS process, less than 5 percent of all hydrocarbons used at the air station were disposed of at the site. The remainder was used for dust control on roads or went directly into storm drains. A conservative estimate of the quantities used for dust control is 700 to 1,000 gallons per week. A smaller but undetermined amount was washed down the storm drains. Using a 5 percent estimate for dumping over the 9 years of operation, approximately 25,000 gallons of material could have been disposed of in the landfill areas. If it is assumed that this amount was split between this AOC and the trailer park dump (Site 41), 10,000 to 15,000 gallons of solvents and oils may have been placed into Site 36. The records state that all waste solvents and oils were burned after disposal at this AOC.

The site covers about 25,000 square feet and rises about 10 to 12 feet above grade. Based on an average depth of fill of 15 feet, the estimated volume of the disposal area is 14,000 cubic yards. These estimates are based on map and photographic information only. No field measurements have been performed for this purpose.

2.13 SITE 41 - CAMP GEIGER DUMP NEAR FORMER TRAILER PARK

The Camp Geiger Dump is located south of the terminus of Robert L. Wilson Boulevard and south of the abandoned trailer park. The area lies between an unnamed creek and Tank Creek. This 30-acre disposal area was operated from 1946 to 1970, and was used as an open burn dump that received mixed industrial waste, commercial waste, construction debris, waste oils, solvents from the air station, garbage, trash, asphalt, concrete, old batteries, Mirex, and ordnance. The size estimate for Site 41 is based on map and photographic information. Field estimates have been made, but no field measurements were performed.

Based on interviews with MCAS New River and Camp Lejeune personnel, it is estimated that 10,000 to 15,000 gallons of waste oils and solvents were disposed of at this AOC. Most of these wastes were probably burned. The number of old lead-containing batteries disposed of is assumed to be relative small. Tons of Mirex in bags were disposed of in 1964. The disposed quantity of ordnance is estimated to include thousands of mortar shells. At least one case of grenades and one 105mm cannon shell were also reported to have been disposed of within the filled area. In the mid-1960s over a 1- to 2-year period, at least two waste disposal incidents occurred during which two truckloads of drummed wastes were unloaded at the site. These wastes were described as being similar to those disposed of at the Rifle Range Chemical Dump (Site 69). No other information concerning drum content was obtained. Based on an estimated fill depth of 5 feet, the total estimated volume of the site is approximately 110,000 cubic yards.

2.14 SITE 48 - MCAS NEW RIVER MERCURY DUMP SITE

The MCAS New River Mercury Dump Site is located on Longstaff Road next to Building 804. The disposal area was utilized from 1956 to 1966 and covers a 100- to 200-foot wide corridor extending from the rear of Building 804 (photo lab) to the edge of the New River. These dimensions correlate with an area of approximately 20,000 square feet. Metallic mercury was periodically drained from the delay lines of the radar units and disposed of at this AOC. Approximately 1 gallon per year of mercury was deposited over a 10-year period, amounting to more than 1,000 pounds total. The best information available indicates that the material was carried by hand and dumped or buried in small quantities at randomly selected spots.

2.15 SITE 69 - RIFLE RANGE CHEMICAL DUMP

The Rifle Range Chemical Dump is located approximately 9,000 feet east of the intersection of Range Road and Sneads Ferry Road, north of Everett Creek. The site is an estimated 6 acres in size, containing approximately 93,000 cubic yards of material. Available records indicate the site was active from the early 1950s until 1976. It is reported that the site was utilized as a disposal area for all chemical wastes generated on the base. The list of materials disposed of at the site include the following materials: pentachlorophenol, DDT, trichloroethylene, malathion, diazinon, lindane, gas cylinders, HTH, PCBs, drums that appeared to contain training agent consisting of chloroacetophenone (CN) gas, all other hazardous materials generated or used on the base, and chemical agent test kits for chemical warfare, which contain no agent substances. Material was disposed of in trenches or pits that were between 6 to 20 feet deep. At least 12 different disposal events have been documented.

2.16 SITE 73 - COURTHOUSE BAY LIQUIDS DISPOSAL AREA

The Courthouse Bay Liquids Disposal Area is located on either side of Courthouse Road approximately 200 feet northwest of Courthouse Bay. This AOC was used from 1946 until 1977. Available information indicates that disposal activities occurred within a 13-acre area. An estimated 400,000 gallons of waste oil were disposed of in this area. The waste oil was generated during routine vehicle maintenance. The oil drained directly on the ground surface. In addition, approximately 20,000 gallons of waste battery acid were reportedly disposed of in this area. Waste battery acid was poured into shallow hand-shoveled holes that were backfilled after disposal.

2.17 SITE 74 - MESS HALL GREASE DISPOSAL AREA

The Mess Hall Grease Disposal Area is located in a wooded area approximately 1/2 mile east of Holcomb Boulevard in the northeast portion of of Camp Lejeune. The Pest Control Area is located approximately 20 to 50 yards south of the grease pit and 75 yards east of Supply Well 654. The disposal area north of the dirt access road is approximately 3 acres in size. The grease pit measured 135 feet long, 30 feet wide, and 12 feet deep. The total size of the Pest Control Area has been estimated at 100 feet by 100 feet. Available information indicates the site was active from the early 1950s until 1960. Disposal activities at the site included the placement of mess hall grease and some waste food into a pit. Records indicate that there was at least one unsuccessful attempt to burn the grease using a more volatile substance. The material was washed out of the pit in 1954, when

Hurricane Hazel passed through the area. Use of the pit was discontinued at this time. No estimates regarding the quantity of grease disposed of at the site have been made.

Drums and pesticide-soaked bags were dumped near the grease pit. Detailed information regarding the contents of the drums is not available. Personnel involved with disposal of the drums were not informed of the drum's contents or origin. It is speculated that the drums may have contained pesticides and/or transformer oil containing PCBs. Best estimates indicate that approximately 500 gallons of pesticides were released from the deposition of the bags. Approximately 2,200 gallons of pesticides, contained in drums, were deposited at the site. It is estimated that 1,100 gallons of PCB-containing oil were buried at the site.

2.18 OPERABLE UNIT 1 - HADNOT POINT INDUSTRIAL AREA

The Hadnot Point Industrial Area (HPIA) is located on the east side of the New River. The HPIA is defined as that area bounded by Holcomb Boulevard to the west, Sneads Ferry Road to the north, Louis Street to the east, and the Main Service Road to the south.

The HPIA is comprised of approximately 75 buildings/facilities. These include maintenance shops, gas stations, administrative offices, commissaries, snack bars, warehouses, storage yards, and a dry cleaning facility. A steam plant and training facility occupy the southwest portion of HPIA. In addition, numerous underground storage tanks, stormwater drains, and oil/water separators are present.

Sites 9, 21, 22, 24, and various isolated areas are the suspected sources of groundwater contamination.

A transformer storage yard (Site 21) and a fuel tank farm (Site 22) are located within the northern portion of HPIA. Sites 21 and 22 will be considered in separate source investigation studies.

The establishment of MCB Camp Lejeune began in the late 1930s with the construction of the HPIA facility. Water supply for the base was furnished by wells that tapped a potable aquifer 50 to 300 feet below the base. In 1941, a water treatment system, including 21 water supply wells, was placed on-line at HPIA. This system serviced most of the base until the 1950s, when additional wells and treatment facilities were installed because of the expanding needs of the base. Today, eight water treatment facilities and over 160 water supply wells serve the MCB at Camp Lejeune.

The Industrial Tank Farm (Site 22) in the northern portion of the HPIA encompasses approximately 4 acres. It was installed in the 1940s and contains 14 underground storage tanks and one above-ground tank. Several fuel leaks have occurred throughout the site's history, with the most recent documented release occurring in 1981. This was a 100-gallon release of diesel fuel. A fuel release of approximately 20,000 to 50,000 gallons of diesel and unleaded fuel occurred in an underground distribution line near the tank truck loading facility in 1979.

3.0 SCOPE OF WORK - RI/FS SITES

Camp Lejeune intends to select and move forward on an interim action for Site 78 (Operable Unit No. 1, Hadnot Point Industrial Area shallow aquifer). The objective of the interim action is to prevent the further spread of groundwater contamination in order to protect human health and the environment. The schedule for this interim action is shown on Figure 4-2.

During FY 1991, a draft RI report, draft FS report, and draft Risk Assessment report were submitted August 23, 1991, for the shallow soils and deep aquifer of Site 78.

Sites 9, 21, 22, and 24 and various isolated areas are the suspected sources of groundwater contamination at the HPIA. Planning for additional RI/FS activities at Site 78 (Operable Unit No. 1), including source characterization (i.e., studies of Sites 9, 21, 22, and 24 in the vicinity of the HPIA), will begin late FY 1992.

Project plans (Work Plan, Health and Safety Plan, and Sampling Plan) were initiated in FY 1991 for full RI/FSs at Sites 6, 48 and 69. These draft reports will be submitted to the Environmental Protection Agency (EPA) Region IV and the Department of Environment, Health, and Natural Resources (DEHNR) by December 1, 1991. A removal action (DDT drums) will be conducted at Site 6 (Lot 203) in FY 1992.

RI/FS activities are projected to be implemented at all potentially contaminated sites over the period of FY 1992 through FY 1996. Projections for documents beyond June 1, 1992 are estimated and will be adjusted appropriately on a yearly basis (each June 1st) when the Site Management Plan is updated.

Primary and secondary documents to be generated during RI/FS activities and provided to the EPA and DEHNR for review are listed Table 3-1. These documents are specified in the FFA.

All of the sites have been previously investigated in various stages of the NACIP Program, and there have been no sites identified that pose immediate threats to human health and the environment. The institutional controls that are in place at the Facility (the existing base security) are adequate in providing the public with the proper protection. If an offsite release is discovered during site investigations, appropriate interim remedial measures will be taken, after EPA and state approval, based on the nature of the release and the risk associated with the offsite release.

TABLE 3-1

FFA PRIMARY AND SECONDARY DOCUMENTS
MCB CAMP LEJEUNE, NORTH CAROLINA

Primary Documents	Secondary Documents
Site Management Plan	Location-specific Statement of Work
Site Community Relations Plan	Location-specific Preliminary Characterization Summary Reports
Location-specific RI/FS Work Plans	Site Health and Safety Plan
Location-specific Baseline Risk Assessments	Site Sampling and Analysis Plan
Location-specific Risk Assessments	Site Quarterly Progress Reports
Location-specific RI Reports	Location-specific Treatability Study Reports
Location-specific FS Reports	Location-specific Remedial Action Progress Reports
Location-specific Proposed Remedial Action Plans	Site Remedial Design Implementation Plan
Location-specific Records of Decision	Location-specific Remedial Pre-design Reports
Location-specific Remedial Design Reports	Location-specific Remedial Action Post-construction Reports
Location-specific Remedial Action Work Plans	
Location-specific Final Remediation Reports	
NPL Close-out Report	

Note: "Site" refers to Camp Lejeune. "Location" refers to individual disposal sites (or areas of contamination) or operable units.

Section 4.0 contains the Site Management Schedules, and Section 5.0 contains summaries of the proposed scope of work for each RI/FS site. The summaries include specific dates for delivery of Primary Documents and target dates for delivery of Secondary Documents (as defined in the Federal Facilities Agreement) for the current fiscal year (1992). Projections for documents in subsequent years are estimated and are included in the Site Management Schedule. These projections will be adjusted appropriately on an annual basis (each June) when the Site Management Plan is updated.

Section 6.0 provides descriptions, the scope of work, site management schedules, and scope of work summaries for sites scheduled for Site Inspections (SIs) and Underground Storage Tank Sites. Section 7.0 describes removal/interim remedial actions.

4.0 RI/FS SITE MANAGEMENT SCHEDULES

The Site Management Schedules are estimated projections of activities scheduled for the Facility. These projections will be adjusted annually (June of each year).

Figure 4-1 shows the Site Management Schedule for Site 78 (Operable Unit No. 1), the Hadnot Point Industrial Area Shallow Aquifer. The Remedial Design for an interim remedy for the shallow aquifer is scheduled to commence in FY 1992. Draft Remedial Investigation, Risk Assessment, and Feasibility Study Reports for this site are scheduled to be submitted in November 1991. Figure 4-2 shows the Site Management Schedule for Site 78 (Operable Unit No. 1), the Hadnot Point Industrial Area Shallow Soils and Deep Aquifer.

Table 4-1 and Figure 4-3 show the Site Management Schedule for continued RI/FS activities for Sites 6, 48, and 69.

Figures 4-4 and 4-5 show the Site Management Schedule for all other RI/FS sites with project starts of FY 1992 through FY 1996.

Any specific actions that need to proceed in advance of the final remedy for a site can be expedited as an Interim Remedial Action or a Removal Action. An interim action may be needed to prevent further contamination or migration of contaminants or to protect public health or the environment. A removal action may be needed to prevent immediate and substantial harm to human health.

TABLE 4-1

SITE MANAGEMENT PLAN
TIMELINE FOR RI/FS ACTIVITIES AT SITES 6, 9,21,22,24, 48, AND 69[1]
MCB CAMP LEJEUNE, NORTH CAROLINA

RI/FS PROJECT PLANS (WORK, HEALTH AND SAFETY, AND SAMPLING PLANS)

Task				Duration (Days)[2]
Prepare Draft RI/FS Project Plans				90
Notice to Proceed	0			
Prepare RI/FS Project Plans	0-45			
Navy/Lejeune Review Preliminary Draft	45-75			
Revise Project Plans	75-90			
Submit Draft RI/FS Project Plans				0
Agency Review Draft RI/FS Project Plans				60
Revise Draft RI/FS Project Plans				60
Submit Draft Final RI/FS Project Plans				0
Agency Review Draft Final RI/FS Project Plans				30
Draft Final Project Plans become Final[3]				0

REMEDIAL INVESTIGATION/FEASIBILITY STUDY AND RISK ASSESSMENT

Task				Duration (Days)[2]
Conduct RI/FS and Risk Assessment				450
Notice to Proceed	0			
Field Work	30-100			
Lab Analysis	100-150			
Data Validation	150-175	Start FS	150	
Remobilize	175-200	Conduct FS	150-385	
Field Work	200-225			
Lab Analysis	225-280			
Data Validation	280-300			
Risk Assessment	300-340			
Formalize Report	340-370			
Navy/Lejeune Review	370-400	Review FS	385-415	
Revise Report	400-430	Revise FS	415-450	
Submit Draft	430	Submit Draft	450	
Submit Draft Report				0
Agency Review Draft Report				60
Revise Draft Report				60
Submit Draft Final Report				0
Agency Review Draft Final Report				30
Draft Final Report Becomes Final[3]				0

TABLE 4-1
SITE MANAGEMENT PLAN
TIMELINE FOR RI/FS ACTIVITIES AT SITES 6, 9, 21, 22, 24, 48, AND 69(1)
MCB CAMP LEJEUNE, NORTH CAROLINA
PAGE TWO

PROPOSED REMEDIAL ACTION PLAN

Task		Duration (Days)
Prepare Draft Proposed Remedial Action Plan		60
Notice to Proceed	0	
Prepare Preliminary Draft	0-25	
Navy/Camp Lejeune Review	25-45	
Revise PRAP	45-60	
Submit Draft PRAP		0
Agency Review Draft PRAP		60
Revise Draft PRAP		60
Submit Draft Final PRAP		0
Agency Review Draft Final PRAP		30
Draft Final PRAP becomes Final(3)		0

COMMUNITY RELATIONS ACTIVITIES

Task		Duration (Days)
Prepare and Publish Public Notice		14
Notice to Proceed	0	
Publish Public Notice	14	
Public Comment Period		30
Begin Public Comment Period	0	
Conduct Public Meeting	14	
End Public Comment Period	30	

RECORD OF DECISION

Task		Duration (Days)
Prepare Draft Record of Decision		60
Notice to Proceed	0	
Prepare Preliminary Draft ROD	0-25	
Navy/Camp Lejeune Review	25-45	
Revise ROD	45-60	
Submit Draft ROD		0
Agency Review Draft ROD		60
Revise Draft ROD		60
Submit Draft Final ROD		0
Agency Review Draft Final ROD		30
Draft Final ROD Becomes Final(3)		0

TABLE 4-1
SITE MANAGEMENT PLAN
TIMELINE FOR RI/FS ACTIVITIES AT SITES 6, 9, 21, 22, 24, 48, AND 69[1]
MCB CAMP LEJEUNE, NORTH CAROLINA
PAGE THREE

REMEDIAL DESIGN WORK PLAN

Task	Duration (Days)
Prepare Draft Remedial Design Work Plan	TBD[4]
Submit Draft RD Work Plan	0
Agency Review Draft RD Work Plan	60
Revise Draft RD Work Plan	60
Submit Draft Final RD Work Plan	0
Agency Review Draft Final RD Work Plan	30
Draft Final RD Work Plan Becomes Final[3]	0

REMEDIAL DESIGN REPORT

Task	Duration (Days)
Prepare Draft Proposed Remedial Action Plan	TBD
Submit Draft RD Report	0
Agency Review Draft RD Report	60
Revise Draft RD Report	60
Submit Draft Final RD Report	0
Agency Review Draft Final RD Report	30
Draft Final RD Report Becomes Final[3]	0

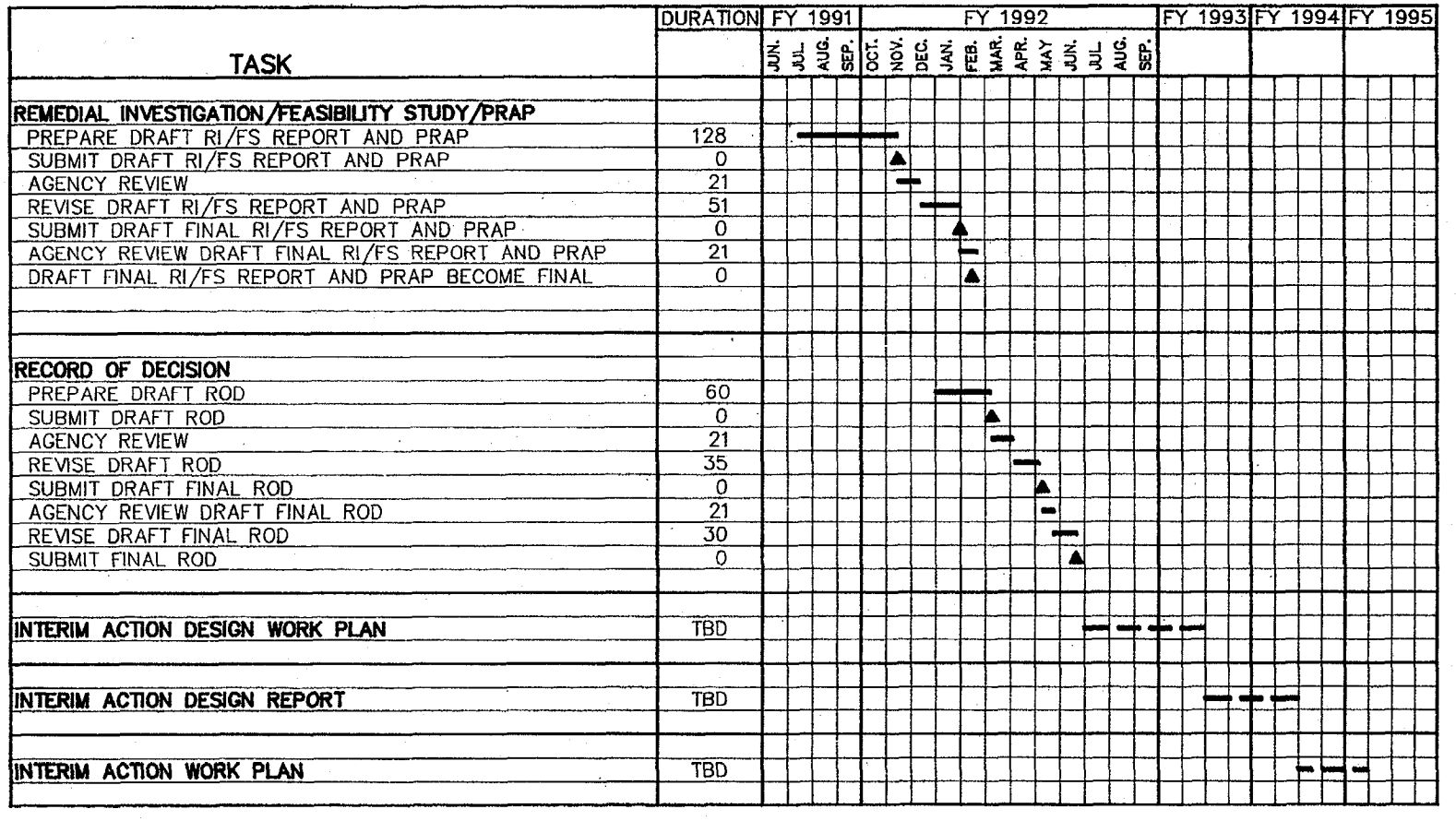
REMEDIAL ACTION WORK PLAN

Task	Duration (Days)
Prepare Draft Remedial Action Work Plan	TBD
Submit Draft RA Work Plan	0
Agency Review Draft RA Work Plan	60
Revise Draft RA Work Plan	60
Submit Draft Final RA Work Plan	0
Agency Review Draft Final RA Work Plan	30
Draft Final RA Work Plan Becomes Final[3]	0

(1) Does not include time from inception to contract award. This takes approximately nine weeks to conduct the following tasks: site scoping visit, preparation of scope of work and government estimate, preparation of documents to forward to contractor, contractor preparation of fee proposal, development of pre-negotiation position, negotiations, preparation of board report, approval of post-negotiation position, obtaining funds, typing contract, sign out, and award.
(2) Durations for reviews and revisions are the maximum durations specified in the FFA. Actual durations may be less.
(3) Draft Final automatically becomes Final within 30 days if no further agency comments received.
(4) To be determined (TBD) based on RI/FS results.

Note:
The schedules as presented in the Final RI/FS Work Plan for these sites will supersede this draft schedule for RI/FSs at these sites.

TASK	DURATION
REMEDIAL INVESTIGATION/FEASIBILITY STUDY/PRAP	
PREPARE DRAFT RI/FS REPORT AND PRAP	128
SUBMIT DRAFT RI/FS REPORT AND PRAP	0
AGENCY REVIEW	21
REVISE DRAFT RI/FS REPORT AND PRAP	51
SUBMIT DRAFT FINAL RI/FS REPORT AND PRAP	0
AGENCY REVIEW DRAFT FINAL RI/FS REPORT AND PRAP	21
DRAFT FINAL RI/FS REPORT AND PRAP BECOME FINAL	0
RECORD OF DECISION	
PREPARE DRAFT ROD	60
SUBMIT DRAFT ROD	0
AGENCY REVIEW	21
REVISE DRAFT ROD	35
SUBMIT DRAFT FINAL ROD	0
AGENCY REVIEW DRAFT FINAL ROD	21
REVISE DRAFT FINAL ROD	30
SUBMIT FINAL ROD	0
INTERIM ACTION DESIGN WORK PLAN	TBD
INTERIM ACTION DESIGN REPORT	TBD
INTERIM ACTION WORK PLAN	TBD



▲ – DOCUMENT SUBMITTAL
▬ – DURATION TO BE DETERMINED (TBD) BASED ON RI/FS

FIGURE 4–1

SITE MANAGEMENT SCHEDULE
HADNOT POINT INDUSTRIAL AREA – SITE 78 (OPERABLE UNIT #1)
INTERIM ACTION FOR SHALLOW AQUIFER
MCB CAMP LEJEUNE, NORTH CAROLINA

HALLIBURTON NUS
Environmental Corporation

TASK	DURATION
REDMEDIAL INVESTIGATION/RISK ASSESSMENT (SHALLOW SOILS/DEEP AQUIFER) **AND FEASIBILITY STUDY** (SHALLOW SOILS)	
SUBMIT DRAFT RI/RA/FS REPORT	0
AGENCY REVIEW	60
REVISE DRAFT RI/RA/FS REPORT	60
SUBMIT DRAFT FINAL RI/RA/FS REPORT	0
AGENCY REVIEW DRAFT FINAL RI/RA/FS REPORT	30
DRAFT FINAL REPORT BECOMES FINAL	0
PROPOSED REMEDIAL ACTION PLAN (SHALLOW SOILS)	120
RECORD OF DECISION (SHALLOW SOILS)	210
SAMPLING AND ANALYSIS PLAN (DEEP AQUIFER)	
PREPARE DRAFT SAMPLING AND ANALYSIS PLANS	90
SUBMIT DRAFT SAMPLING AND ANALYSIS PLANS	0
AGENCY REVIEW	60
REVISE DRAFT SAMPLING AND ANALYSIS PLANS	60
SUBMIT DRAFT FINAL SAMPLING AND ANALYSIS PLANS	0
AGENCY REVIEW DRAFT FINAL SAMPLING AND ANALYSIS PLANS	30
DRAFT FINAL SAMPLING AND ANALYSIS PLANS BECOMES FINAL	0

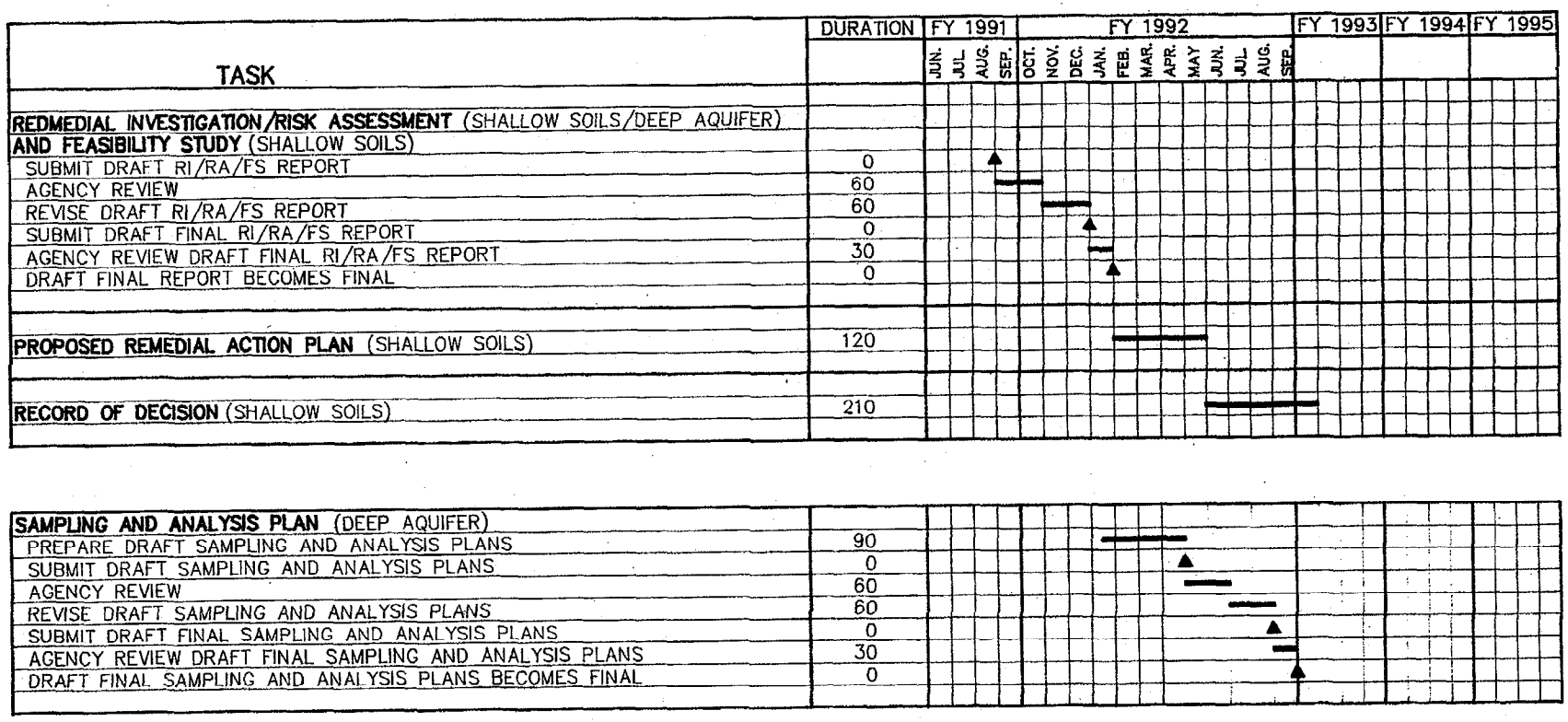


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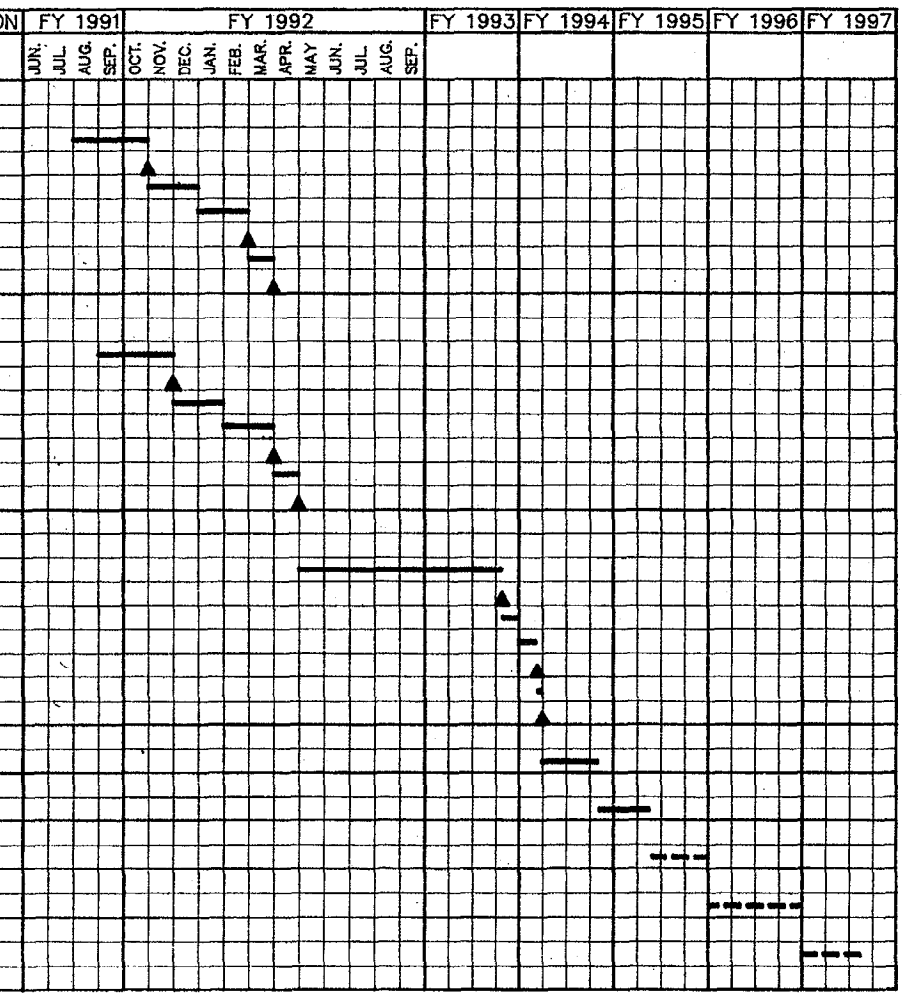
FIGURE 4–2

SITE MANAGEMENT SCHEDULE
HADNOT POINT INDUSTRIAL AREA – SITE 78 (OPERABLE UNIT #1)
SHALLOW SOILS AND DEEP AQUIFER
MCB CAMP LEJEUNE, NORTH CAROLINA

HALLIBURTON NUS
Environmental Corporation

TASK	DURATION
SITE ASSESSMENT REPORT	
PREPARE DRAFT SITE ASSESSMENT REPORT	90
SUBMIT DRAFT REPORT	0
AGENCY REVIEW	60
REVISE DRAFT REPORT	60
SUBMIT DRAFT FINAL REPORT	0
AGENCY REVIEW DRAFT FINAL REPORT	30
DRAFT FINAL REPORT BECOMES FINAL	0
RI/FS PROJECT PLANS	
PREPARE DRAFT RI/FS PROJECT PLANS	90
SUBMIT DRAFT RI/FS PROJECT PLANS	0
AGENCY REVIEW	60
REVISE DRAFT RI/FS PROJECT PLANS	60
SUBMIT DRAFT FINAL RI/FS PROJECT PLANS	0
AGENCY REVIEW DRAFT FINAL RI/FS PROJECT PLANS	30
DRAFT FINAL PROJECT PLANS BECOME FINAL	0
REMEDIAL INVESTIGATION/FEASIBILITY STUDY/RISK ASSESSMENT	
CONDUCT RI/FS AND RA	450
SUBMIT DRAFT RI/FS AND RA REPORT	0
AGENCY REVIEW	60
REVISE DRAFT RI/FS AND RA REPORT	60
SUBMIT DRAFT FINAL RI/FS AND RA REPORT	0
AGENCY REVIEW DRAFT FINAL REPORT	30
DRAFT FINAL RI/FS AND RA REPORT BECOMES FINAL	0
PROPOSED REMEDIAL ACTION PLAN	210
RECORD OF DECISION	210
REMEDIAL DESIGN WORK PLAN	TBD
REMEDIAL DESIGN REPORT	TBD
REMEDIAL ACTION WORK PLAN	TBD



▲ DOCUMENT SUBMITTAL

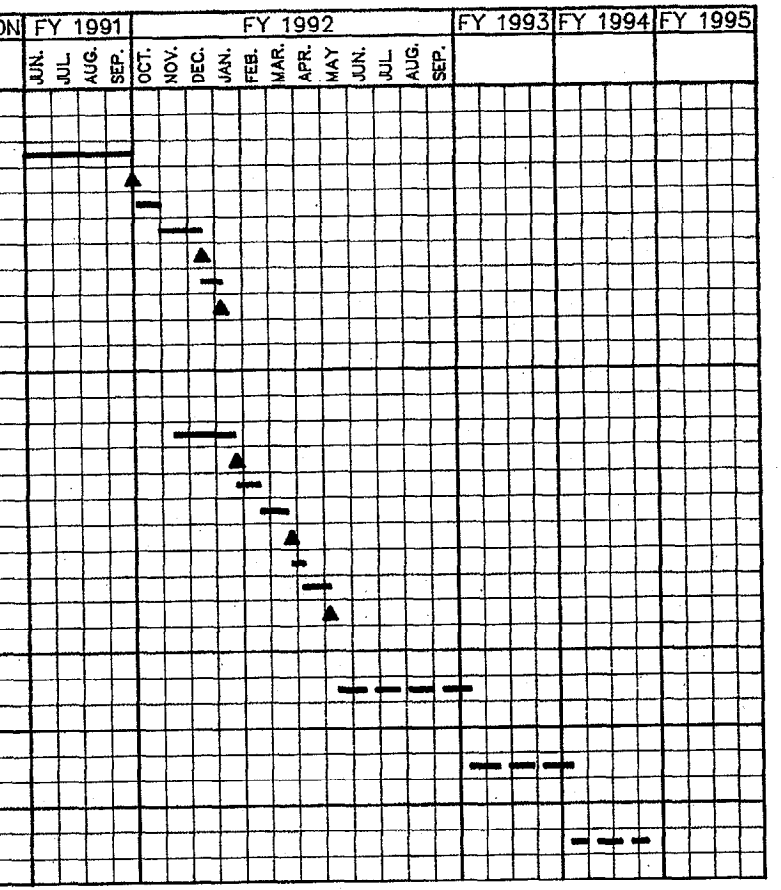
--- DURATION TO BE DETERMINED (TBD) IN RI/FS WORK PLAN

FIGURE 4–3

SITE MANAGEMENT SCHEDULE
FY 1991 RI/FS PROJECT STARTS – SITES 6, 48, 69
MCB CAMP LEJEUNE, NORTH CAROLINA

HALLIBURTON NUS
Environmental Corporation

TASK	DURATION
REMEDIAL INVESTIGATION/FEASIBILITY STUDY/PRAP	
PREPARE DRAFT RI/FS REPORT AND PRAP	128
SUBMIT DRAFT RI/FS REPORT AND PRAP	0
AGENCY REVIEW	21
REVISE DRAFT RI/FS REPORT AND PRAP	51
SUBMIT DRAFT FINAL RI/FS REPORT AND PRAP	0
AGENCY REVIEW DRAFT FINAL RI/FS REPORT AND PRAP	21
DRAFT FINAL RI/FS REPORT AND PRAP BECOME FINAL	0
RECORD OF DECISION	
PREPARE DRAFT ROD	60
SUBMIT DRAFT ROD	0
AGENCY REVIEW	21
REVISE DRAFT ROD	35
SUBMIT DRAFT FINAL ROD	0
AGENCY REVIEW DRAFT FINAL ROD	21
REVISE DRAFT FINAL ROD	30
SUBMIT FINAL ROD	0
INTERIM ACTION DESIGN WORK PLAN	TBD
INTERIM ACTION DESIGN REPORT	TBD
INTERIM ACTION WORK PLAN	TBD



▲ – DOCUMENT SUBMITTAL
▬ – DURATION TO BE DETERMINED (TBD) BASED ON RI/FS

FIGURE 4–4

SITE MANAGEMENT SCHEDULE
FY 1992 PROJECT STARTS – SITES 9, 21, 22, 24
REMEDIAL INVESTIGATION/FEASIBILITY STUDIES
MCB CAMP LEJEUNE, NORTH CAROLINA

HALLIBURTON NUS
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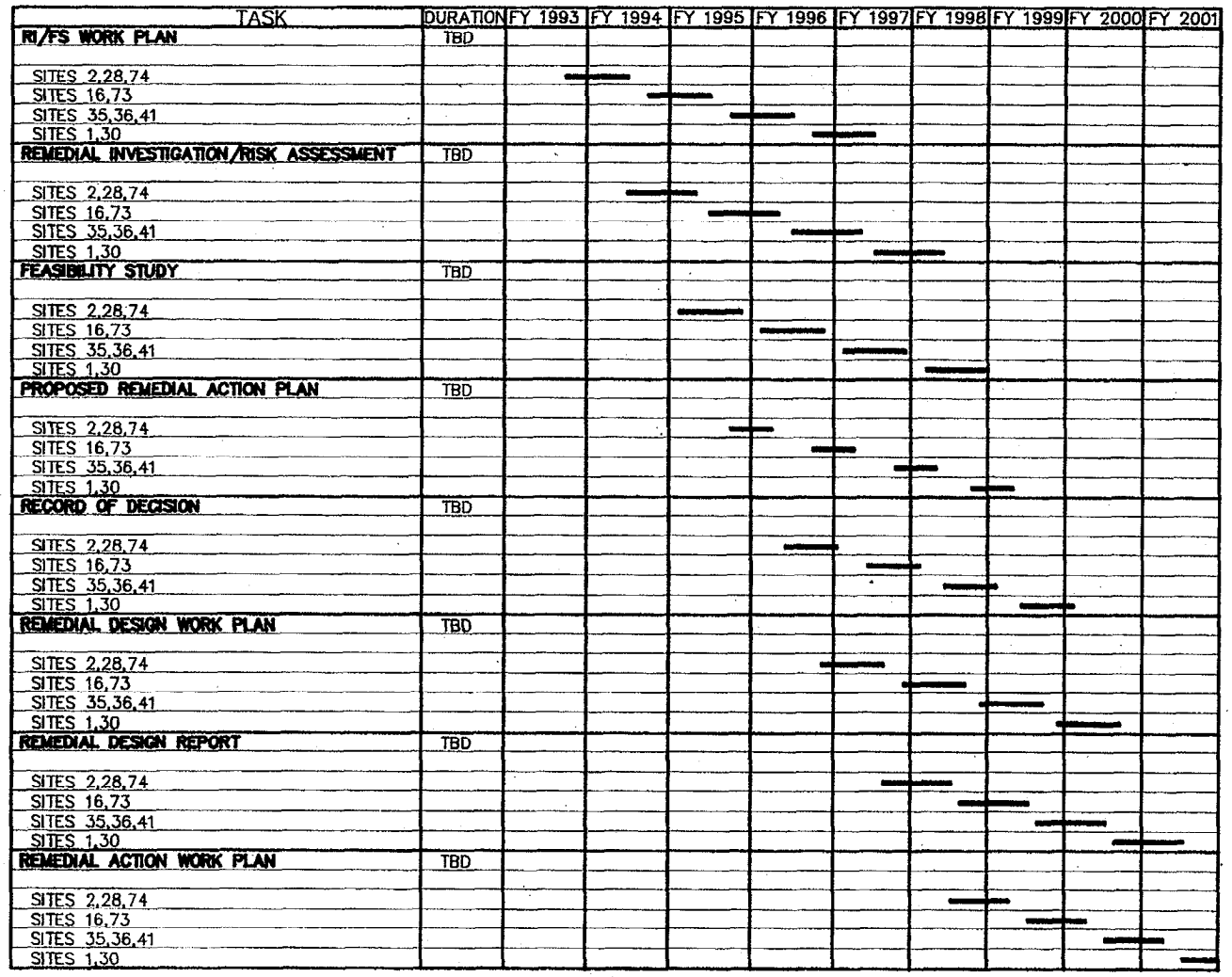

TBD – DURATION TO BE DETERMINED IN WORK PLANS

FIGURE 4–5

SITE MANAGEMENT SCHEDULE
FY 1993 – FY 1996 RI/FS PROJECT STARTS
MCB CAMP LEJEUNE, NORTH CAROLINA

HALLIBURTON NUS
Environmental Corporation

5.0 SCOPE OF WORK SUMMARIES - RI/FS SITES

Scope of Work summaries for each of the RI/FS sites at the Facility are presented in this section.

The scheduled start is the start date for the preparation of the draft RI/FS Work Plan, and the scheduled complete is the date of submission of the final Record of Decision.

The Scope of Work summaries include specific dates for delivery of Primary Documents and target dates for delivery of Secondary Documents for the current fiscal year (1992). Projections for documents in subsequent years are estimated and included in the Site Management Schedules. These projections will be adjusted appropriately on an annual basis (each June 1st) when the Site Management Plan is updated. Scheduled complete dates and durations are site/project specific and will be determined in work plans for each site and/or operable unit. Where no deliverables are scheduled for FY 1992, the next scheduled deliverable is shown, including, as a minimum, a 5-year overview of remedial activities (1992-1996). Timelines are presented graphically in Figures 4-1 through 4-5.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Site 78 [Hadnot Point Industrial Area (HPIA), Excluding Sites 21 and 22]: Operable Unit No. 1
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: **OPERABLE UNIT NO. 1 (SITE 78)**: Shallow Aquifer

SCOPE OF WORK: Actions to select an interim remedial action for the shallow aquifer. Remedial Design for interim action (FY 1992). Additional RI/FS activities to address the source of contamination and to continue the groundwater investigation are scheduled to start in FY 1992. (The scope of work summaries for these actions are listed under Sites 9, 21, 22, and 24).

DELIVERABLES: Shallow Aquifer		**COMPLIANCE* DATE**	**TARGET DATE**
FY92:	Draft RI/FS Report and PRAP	November 20, 1991	
	Draft Final RI/FS Report/PRAP	Within 60 days of receipt of EPA/DEHNR comments to the Draft RI/FS/PRAP.	
	Final RI/FS Report and PRAP	Draft Final becomes Final within 30 days if no further comments are received.	
	Public Notice		14 days to prepare and publish notice.
	Public Comment Period	30 days minimum.	
	Public Meeting	Approximately 14 days after start of public comment period.	
	End Public Comment Period	Minimum of 30 days after start of public comment period.	
	Draft ROD	60 days after end of public comment period.	
	Draft Final ROD	Within 60 days of receipt of EPA/DEHNR comments to the Draft ROD.	
	Final ROD	Draft Final becomes Final within 30 days if no further comments are received.	
FY93:	Draft Interim Action Design Work Plan		
	Draft Interim Action Design Report		
FY94:	Draft Interim Action Work Plan		

SCHEDULED START:(1)	FY 1991	**ACTUAL START:**	FY 1991
SCHEDULED COMPLETE:(2)	TBD	**ACTUAL COMPLETE:**	
DURATION:(2)	TBD		

(1) See Figure 4-1 (Shallow Aquifer).
(2) To be determined. See Figure 4-1.

* Schedules shown under "Compliance Date" column represent expedited schedules agreed to by the EPA, DEHNR, and the Navy. If any party cannot maintain the expedited schedule, the timeframes outlined in the FFA will govern.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

SITE NUMBER: **Operable Unit No. 1 (Site 78):** Shallow Soils and Deep Aquifer

SCOPE OF WORK: RI/FS activities to address source of contamination and to continue the groundwater investigation. Groundwater investigation of the deep aquifer was initially conducted as part of the shallow soils/deep aquifer investigation. The deep aquifer requires further characterization.

DELIVERABLES: Shallow Soils/Deep Aquifer*		**COMPLIANCE DATE**	**TARGET DATE**
FY91:	Draft RI/RA Report (shallow soils, deep aquifer)	August 23, 1991	
	Draft FS (shallow soils)	August 23, 1991	
FY92:	Draft Final RI/RA Reports (shallow soils, deep aquifer)	Within 60 days of receipt of EPA/DEHNR comments to the Draft RI/RA.	
	Final RI/RA Reports	Draft Final becomes Final within 30 days if no further comments are received.	
	Draft Final FS (shallow soils)	The Draft Final Feasibility Study was not provided since the Navy/Marine Corps understanding was that the risks evaluated for the shallow soils are below acceptable EPA levels.	
	Draft PRAP (shallow soils)	Within 60 days of Draft Final RI/RA/FS becoming Final RI/RA/FS.	
	Draft Final PRAP	Within 60 days of receipt of EPA/DEHNR comments to Draft PRAP.	
	Final PRAP (shallow soils)	Draft Final becomes Final within 30 days if no further comments are received.	
	Public Notice		14 days to prepare and publish notice.
	Public Comment Period	30 days minimum.	
	Public Meeting	Approximately 14 days after start of public comment period.	
	End Public Comment Period	Minimum of 30 days after start of public comment period.	
	Draft ROD	60 days after end of Public Comment Period.	
	Draft Final ROD	Within 60 days of receipt of EPA/DEHNR comments to Draft ROD.	

SITE NUMBER: **Operable Unit No. 1 (Site 78):** Shallow Soils and Deep Aquifer (Continued)

DELIVERABLES: Shallow Soils/Deep Aquifer*		**COMPLIANCE DATE**	**TARGET DATE**
FY93:	Final ROD	Draft Final becomes Final within 30 days if no further comments are received.	
	Draft Remedial Design Work Plan		
FY94:	Draft Remedial Design Report Draft Remedial Action Work Plan		

* To avoid delay of the ROD for the shallow soils, the FS for the shallow soils (excluding the deep aquifer) will be completed while further characterization of the deep aquifer (addressed on the next page) is conducted.

SCOPE OF WORK: To defined and characterize any contamination in the deep aquifer.

DELIVERABLES: Deep Aquifer		**COMPLIANCE* DATE**	**TARGET DATE**
FY92:	Draft Sampling and Analysis Plan		April 1992

SCOPE OF WORK: To remove free product (petroleum) on surface of shallow aquifer at Site 22.

DELIVERABLES: Free Product Recovery(1)		**COMPLIANCE DATE**	**TARGET DATE**
FY91:	Free product recovery in operation		November 1991

SCHEDULED START:(2)	FY 1991	**ACTUAL START:**	FY 1991
SCHEDULED COMPLETE:(3)	TBD	**ACTUAL COMPLETE:**	
DURATION:(3)	TBD		

(1) Being handled under the UST program (see Section 6.0, Site 22).
(2) See Figure 4-2 (shallow soils and deep aquifer).
(3) To be determined. See Figure 4-2.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Storage Lots 201 and 203
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 6

SCOPE OF WORK: Detailed sampling investigation to determine the vertical and horizontal extent of contamination. Investigate source of VOCs in surface water. Site investigation consisting of geophysics, soil gas and subsequent installation of monitoring wells and collection of soil samples in forested area between Lot 203 and Wallace Creek. Following characterization, Risk Assessment to determine risk levels and cleanup levels for the FS. A removal action (DDT drums) will be conducted at Lot 203 in FY92.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	Draft Site Assessment Report		November 1, 1991
	Draft RI/FS Work Plan	December 1, 1991	
	Draft Health and Safety Plan		December 1, 1991
	Draft Sampling and Analysis Plan		December 1, 1991
	Removal/DDT Drums(1)		Second Fiscal Quarter FY92
	Draft Final RI/FS Work Plan	Within 60 days of receipt of EPA/DEHNR comments to the Draft RI/FS Work Plan	
	Removal/Interim Remedial Action		(?)
FY93:	Draft RI/FS/Risk Assessment Report		
FY94:	Draft PRAP		
	Community Relations Activities		
FY95:	Draft ROD		
	Draft RD Work Plan		
FY96:	Draft RD Report		

SCHEDULED START:(2)	September 1991	**ACTUAL START:**	August 1991
SCHEDULED COMPLETE:(3)	TBD	**ACTUAL COMPLETE:**	
DURATION:(3)	TBD		

(1) See Section 7.0, Removal/Action: DDT Drums.
(2) See Figure 4-3.
(3) To be determined. See Table 4-3.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: MCAS New River Mercury Dump Site
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 48

SCOPE OF WORK: Detailed soil sampling within and adjacent to the corridor of disposal. Detailed sediment sampling in the adjacent marsh. Installation and sampling of groundwater monitoring wells. Sampling of aquatic and benthic organisms within the New River adjacent to the site. Use all environmental data in a Risk Assessment, followed by a FS.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	Draft Site Assessment Report		November 1, 1991
	Draft RI/FS Work Plan	December 1, 1991	
	Draft Health and Safety Plan		December 1, 1991
	Draft Sampling and Analysis Plan		December 1, 1991
	Draft Final RI/FS Work Plan	Within 60 days of receipt of EPA/DEHNR comments to the Draft RI/FS Work Plan	
FY93:	Draft RI/FS/Risk Assessment Report		
FY94:	Draft PRAP		
	Community Relations Activities		
FY95:	Draft ROD		
	Draft RD Work Plan		
FY96:	Draft RD Report		

SCHEDULED START:(1)	September 1991	**ACTUAL START:**	August 1991
SCHEDULED COMPLETE:(2)	TBD	**ACTUAL COMPLETE:**	
DURATION:(2)	TBD		

(1) See Figure 4-3.
(2) To be determined. See Table 4-3.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Rifle Range Chemical Dump
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 69

SCOPE OF WORK: Extensive field investigation is required to determine the location and exact nature of the various waste materials disposed of at the site. Risk assessment and selection of preferred remedial alternative to follow the field investigation.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	Draft Site Assessment Report		November 1, 1991
	Draft RI/FS Work Plan	December 1, 1991	
	Draft Health and Safety Plan		December 1, 1991
	Draft Sampling and Analysis Plan		December 1, 1991
	Draft Final RI/FS Work Plan	Within 60 days of receipt of EPA/DEHNR comments to the Draft RI/FS Work Plan	
FY93:	Draft RI/FS/Risk Assessment Report		
FY94:	Draft PRAP		
	Community Relations Activities		
FY95:	Draft ROD		
	Draft RD Work Plan		
FY96:	Draft RD Report		

SCHEDULED START:(1)	September 1991	**ACTUAL START:**	August 1991
SCHEDULED COMPLETE:(2)	TBD	**ACTUAL COMPLETE:**	
DURATION:(2)	TBD		

(1) See Figure 4-3.
(2) To be determined. See Table 4-3.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Fire Fighting Area at Piney Green Road
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 9

SCOPE OF WORK: Conduct source study of soil contamination.

(Also see scope of work summary for Operable Unit No. 1, Hadnot Point Industrial Area - Site 78.)

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	Draft RI/FS Work Plan	September 30, 1992	
FY93:	Draft RI/Risk Assessment Report		
FY94:	Draft FS Report Draft PRAP Community Relations Activities		
FY95:	Draft ROD		
FY96:	Draft RD Work Plan Draft RD Report		

SCHEDULED START:(1) FY 1992 **ACTUAL START:**
SCHEDULED COMPLETE:(2) TBD **ACTUAL COMPLETE:**
DURATION:(2) TBD

(1) See Figure 4-4.
(2) To be determined. See Table 4-1.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Transformer Storage Lot 140
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 21

SCOPE OF WORK: Further characterization of the extent of vertical soil contamination. More detailed delineation of soil and groundwater contamination. Conduct Risk Assessment and conduct FS if contamination warrants.

(Also see scope of work summary for Operable Unit No. 1, Hadnot Point Industrial Area - Site 78.)

DELIVERABLES:		COMPLIANCE DATE	TARGET DATE
FY92:	Draft RI/FS Work Plan	September 30, 1992	
FY93:	Draft RI/Risk Assessment Report		
FY94:	Draft FS Report Draft PRAP Community Relations Activities		
FY95:	Draft ROD		
FY96:	Draft RD Work Plan Draft RD Report		

SCHEDULED START:(1) FY 1992 **ACTUAL START:**
SCHEDULED COMPLETE:(2) TBD **ACTUAL COMPLETE:**
DURATION:(2) TBD

(1) See Figure 4-4.
(2) To be determined. See Table 4-1.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Industrial Area Tank Farm
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 22

SCOPE OF WORK: Conduct source study of soil contamination.

(Also see scope of work summary for Operable Unit No. 1, Hadnot Point Industrial Area - Site 78.)

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	Draft RI/FS Work Plan	September 30, 1992	
FY93:	Draft RI/Risk Assessment Report		
FY94:	Draft FS Report Draft PRAP Community Relations Activities		
FY95:	Draft ROD		
FY96:	Draft RD Work Plan Draft RD Report		

SCHEDULED START:(1)	FY 1992	**ACTUAL START:**	
SCHEDULED COMPLETE:(2)	TBD	**ACTUAL COMPLETE:**	
DURATION:(2)	TBD		

(1) See Figure 4-4.
(2) To be determined. See Table 4-1.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Industrial Area Fly Ash Dump
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 24

SCOPE OF WORK: Conduct source study of soil contamination.

(Also see scope of work summary for Operable Unit No. 1, Hadnot Point Industrial Area - Site 78.)

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	Draft RI/FS Work Plan	September 30, 1992	
FY93:	Draft RI/Risk Assessment Report		
FY94:	Draft FS Report Draft PRAP Community Relations Activities		
FY95:	Draft ROD		
FY96:	Draft RD Work Plan Draft RD Report		

SCHEDULED START:(1) FY 1992
SCHEDULED COMPLETE:(2) TBD
DURATION:(2) TBD

ACTUAL START:
ACTUAL COMPLETE:

(1) See Figure 4-4.
(2) To be determined. See Table 4-1.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: Date SMP submitted to EPA
SITE NAME: Former Nursery/Day-Care Center
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 2

SCOPE OF WORK: Additional characterization of soil contamination and additional hydrogeologic investigation to determine the potential for interconnection of the shallow and deep aquifers prior to initiation of a Risk Assessment and FS.

DELIVERABLES:		COMPLIANCE DATE	TARGET DATE
FY92:	None		
FY93:	Draft RI/FS Work Plan	September 30, 1993	
FY94:	Draft RI/Risk Assessment Report		
FY95:	Draft FS Draft PRAP Community Relations Activities		
FY96:	Draft ROD		

SCHEDULED START:(1) FY 1993
SCHEDULED COMPLETE(2)**:** TBD
DURATION:(2) TBD

ACTUAL START:
ACTUAL COMPLETE:

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Hadnot Point Burn Dump
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 28

SCOPE OF WORK: Surface water and sediment sampling of recreational pond and Cogdels Creek. Soil sampling on a grid to determine the volume of contaminated soil and contaminant concentrations. Conduct Risk Assessment based on results to determine remedial goals to be used in the FS.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	None		
FY93:	Draft RI/FS Work Plan	September 30, 1993	
FY94:	Draft RI/Risk Assessment Report		
FY95:	Draft FS		
	Draft PRAP		
	Community Relations Activities		
FY 96:	Draft ROD		

SCHEDULED START:(1) FY 1993 **ACTUAL START:**
SCHEDULED COMPLETE:(2) TBD **ACTUAL COMPLETE:**
DURATION:(2) TBD

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Mess Hall Grease Pit Area
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 74

SCOPE OF WORK: Installation and sampling of additional monitoring wells. Soil sampling on a grid to determine the volume of contaminated soil that may require remediation, as determined by a Risk Assessment.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	None		
FY93:	Draft RI/FS Work Plan	September 30, 1993	
FY94:	Draft RI/Risk Assessment Report		
FY95:	Draft FS Draft PRAP Community Relations Activities		
FY96:	Draft ROD		

SCHEDULED START:(1) FY 1993 **ACTUAL START:**
SCHEDULED COMPLETE:(2) TBD **ACTUAL COMPLETE:**
DURATION:(2) TBD

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Montford Point Burn Dump
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 16

SCOPE OF WORK: Detailed sampling investigation for asbestos, waste oils, and PCBs to determine the horizontal and vertical extent of contamination. Following characterization, risk assessment to determine risk levels and cleanup levels for the FS.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY 92:	None		
FY93:	None		
FY94:	Draft RI/FS Work Plan	September 30, 1994	
FY95:	Draft RI/Risk Assessment Report		
FY96:	Draft FS Draft PRAP Community Relations Activities		

SCHEDULED START:(1) FY 1994 **ACTUAL START:**
SCHEDULED COMPLETE:(2) TBD **ACTUAL COMPLETE:**
DURATION:(2) TBD

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Courthouse Bay Liquids Disposal Area
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 73

SCOPE OF WORK: Installation and sampling of monitoring wells within known or suspected disposal pits. Soil sampling on a closely-spaced grid to determine the volume of contaminated soil for Risk Assessment and FS purposes.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	None		
FY93:	None		
FY94:	Draft RI/FS Work Plan	September 30, 1994	
FY95:	Draft RI/Risk Assessment Report		
FY96:	Draft FS Draft PRAP Community Relations Activities		

SCHEDULED START:(1) FY 1994 **ACTUAL START:**
SCHEDULED COMPLETE:(2) TBD **ACTUAL COMPLETE:**
DURATION:(2) TBD

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Camp Geiger Area Fuel Farm
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 35

SCOPE OF WORK: Additional investigation to determine the horizontal and vertical extent of soil and groundwater contamination and within Brinson Creek. Investigation of the adjacent automobile hobby shop to determine whether it is a source of VOC contamination. Conduct Risk Assessment upon completion of environmental characterization.

DELIVERABLES:		COMPLIANCE DATE	TARGET DATE
FY92:	None		
FY93:	None		
FY94:	None		
FY95:	Draft RI/FS Work Plan	September 30, 1995	
FY96:	Draft RI/Risk Assessment Report		

SCHEDULED START:(1)	FY 1995	**ACTUAL START:**	
SCHEDULED COMPLETE:(2)	TBD	**ACTUAL COMPLETE:**	
DURATION:(2)	TBD		

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Camp Geiger Area Dump Near Sewage Treatment Plant
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 36

SCOPE OF WORK: Additional investigation of nature and extent of contamination of soil, the shallow aquifer, and the deep aquifer within the filled area. Conduct Risk Assessment to evaluate risks to human health and the environment.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	None		
FY93:	None		
FY94:	None		
FY95:	Draft RI/FS Work Plan	September 30, 1995	
FY96:	Draft RI/Risk Assessment Report		

SCHEDULED START:(1)	FY 1995	**ACTUAL START:**	
SCHEDULED COMPLETE:(2)	TBD	**ACTUAL COMPLETE:**	
DURATION:(2)	TBD		

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Camp Geiger Area Dump Near Former Trailer Park
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 41

SCOPE OF WORK: Review of available aerial photography, geophysical surveys to determine specific disposal features within the landfill, soil gas survey to map VOC or petroleum hydrocarbon contamination, soil sampling in and around specific disposal features (possibly including test pits), installation of additional monitoring wells, and collection and analysis of extensive soil and sediment samples. Conduct Risk Assessment to evaluate potential risk to human health and the environment. Conduct FS based on detailed investigation.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	None		
FY93:	None		
FY94:	None		
FY95:	Draft RI/FS Work Plan	September 30, 1995	
FY96:	Draft RI/Risk Assessment Report		

SCHEDULED START:(1)	FY 1995	**ACTUAL START:**	
SCHEDULED COMPLETE:(2)	TBD	**ACTUAL COMPLETE:**	
DURATION:(2)	TBD		

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: French Creek Liquids Disposal Area
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 1

SCOPE OF WORK: Additional groundwater quality characterization within specific disposal features, chemical characterization of any affected unsaturated soils, and a risk assessment to determine whether the detected contamination represents an unacceptable risk to human health or the environment.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY 92:	None		
FY93:	None		
FY94:	None		
FY95:	None		
FY 96:	Draft RI/FS Work Plan	September 30, 1996	

SCHEDULED START:(1)	FY 1996	**ACTUAL START:**	
SCHEDULED COMPLETE:(2)	TBD	**ACTUAL COMPLETE:**	
DURATION:(2)	TBD		

(1) See Figure 4-5.
(2) To be determined.

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**
SITE NAME: Sneads Ferry Road - Fuel Tank Sludge Area
ACTIVITY: Remedial Investigation/Feasibility Study

SITE NUMBER: 30

SCOPE OF WORK: Additional round of groundwater, surface water, and sediment sampling. Risk Assessment to evaluate risk to human health or the environment.

DELIVERABLES:		**COMPLIANCE DATE**	**TARGET DATE**
FY92:	None		
FY93:	None		
FY94:	None		
FY95:	None		
FY96:	Draft RI/FS Work Plan	September 30, 1996	

SCHEDULED START:(1) FY 1996
SCHEDULED COMPLETE:(2) TBD
DURATION(2)**:** TBD

ACTUAL START:
ACTUAL COMPLETE:

(1) See Figure 4-5.
(2) To be determined.

6.0 SITE INSPECTIONS AND UNDERGROUND STORAGE TANKS

6.1 INTRODUCTION

Sections 2.0 through 5.0 of the Site Management Plan provided descriptions, the scope of work, site management schedules, and scope of work summaries for RI/FS sites listed in the FFA. This section provides the same information for sites scheduled for Site Inspections (SIs). It is important to note that these SI sites are not required to adhere to the same reporting requirements as defined in the Camp Lejeune Federal Facilities Agreement for RI/FS sites. If these sites warrant further investigation based on the SI results, they will be added to the FFA list of RI/FS sites.

This section also describes proposed product recovery activities for two UST sites where RI/FS activities are also planned. Product recovery at UST sites will be conducted with the approval of the North Carolina DEHNR.

6.2 SITES

The list of sites at MCB Camp Lejeune that require Site Inspections to determine whether additional RI/FS activities are needed is shown in Table 6-1.

Table 6-2 lists the SI sites along with the priority for work (fiscal year project start). These sites were prioritized according to the same criteria presented in Section 2.0 (i.e., potential for groundwater contamination, proximity to receptors, contaminants verified, and potential for aquatic stress).

Table 6-3 shows SI activities by fiscal year project start.

Table 6-4 lists UST sites, along with the proposed activity, prioritization criteria, and priority for work. As can be seen, these UST sites also require RI/FS-type activities in addition to product recovery remedial action. These sites were previously described in Section 2.0.

Following are brief descriptions of the sites where SIs are scheduled to be performed.

TABLE 6-1

DISPOSAL SITES REQUIRING SITE INSPECTIONS
MCB CAMP LEJEUNE, NORTH CAROLINA

Site No.	Site Description	Dates Used	Material Deposited
3 (1)	Old Creosote Plant	1951-1952	Trash, general debris
7 (1)	Tarawa Terrace Dump	Unknown-1972	Construction debris, STP filter sand, household trash
12 (1)	Explosive Ordnance Disposal (EOD) (G-4)	Early 1960s	Ordnance burned or exploded, colored smokes, white phosphorus
43 (1)	Agan Street Dump	Unknown	Boards, trash, WTP sludge, fiberglass
44 (2)	Jones Street Dump	1950s	Debris, cloth, boards, old paint cans
54	Crash Crew Fire Training Burn Pit	1950s - Present	Contaminated fuels, oil spills
63	Verona Loop Dump	Unknown	Bivouac wastes
65 (1)	Engineer Area Dump	Pre-1958 to 1972	Burn area dump, construction debris
68	Rifle Range Dump	1942 - 1972	Solvents, WTP sludge, construction materials
75	MCAS Basketball Court Site	Early 1950s	Training agents (CN, CNC, CNB, and/or CNS)
76	MCAS Curtis Road Site	1949	Training agents (CN, CNC, CNB, and/or CNS)
80 (3)	Paradise Point (Golf Course Pesticide Area)	Unknown	Pesticides, waste oil
82 (3)	Piney Green Road VOC Area	Unknown	Unknown
A	MCAS officers Housing Area	Unknown	Unknown

(1) Requires further field investigation/sampling to justify previous "no action" decision documented in the IAS Report (1983) as per the EPA RFA.

(2) To be studied because of Camp Lejeune's concern of the potential for environmental contamination.

(3) Potentially new site.

TABLE 6-2

SI SITES
MCB CAMP LEJEUNE, NORTH CAROLINA

Site		Prioritization Criteria				Fiscal Year (Project Start)	Comment
No.	Description	Groundwater Contamination Potential	Proximity to Receptors	Contaminants Verified	Aquatic Stress Potential		
3	Old Creosote Plant	X				1991	
7	Tarawa Terrace Dump		(b)			1991	
12	Explosive Ordnance Disposal (G-4)					1996	Explosive ordnance may be found at this site.
43	Agan Street Dump	X	(b)			1991	
44	Jones Street Dump	X	(b)			1991	
54	Crash Crew Fire Training Burn Pit	X	(a)	X		1991	
63	Verona Loop Dump	X				1991	
65	Engineer Area Dump	X		X	X	1991	
68	Rifle Range Dump	X				1997	Possible laboratory problems.
75	MCAS Basketball Court Site	X	(b)			1995	
76	MCAS Curtis Road Site	X	(b)			1997	
80	Paradise Point (Golf Course Pesticide Area)	X	(a,b,c)		X	1991	
82	Piney Green Road VOC Area	X		X	X	1991	
A	MCAS Officer's Housing Area	X	(b)		X	1996	

(a) Workers on base
(b) Residential areas
(c) Recreational areas

TABLE 6-3

PROPOSED SI ACTIVITIES BY FISCAL YEAR PROJECT START
MCB CAMP LEJEUNE, NORTH CAROLINA

Site No.	Description	Fiscal Year
3	Old Creosote Plant	1991
7	Tarawa Terrace Dump	1991
43	Agan Street Dump	1991
44	Jones Street Dump	1991
54	Crash Crew Fire Training Burn Pit	1991
63	Verona Loop Dump	1991
65	Engineer Area Dump	1991
80	Paradise Point (Golf Course Pesticide Area)	1991
82	Piney Green Road VOC Area	1991
A	MCAS Officers Housing Area	1995
12	Explosive Ordnance Disposal (G-4)	1996
75	MCAS Basketball Court Site	1996
68	Rifle Range Dump	1997
76	MCAS Curtis Road Site	1997

TABLE 6-4

UST-RI/FS SITES
MCB CAMP LEJEUNE, NORTH CAROLINA

Site		Proposed Activity				Prioritization Criteria				Fiscal Year (Project Start)	Comment
No.	Description	No Action	Site Inspection	Future RI/FS	Remedial Action	Groundwater Contamination Potential	Proximity to Receptors	Contaminants Verified	Aquatic Stress Potential		
22	Industrial Area Tank Farm (1)			X		X	(a)	X		1991 (2) 1992 (3)	
35	Camp Geiger Area Fuel Farm (1)			X	X(2)	X	(a)	X	X	1991 (2) 1996 (3)	

(1) Also an RI/FS Site
(2) Product Recovery
(3) RI/FS
(a) Workers on base

6.2.1 Site 3 - Old Creosote Plant

The old creosote plant operated from 1951 to 1952 to supply treated lumber during construction of the railroad on the base. The facility was located approximately 800 feet east of Building 613, on the opposite side of Holcomb Boulevard. Logs were cut into railroad ties at the onsite sawmill, then pressure treated with hot creosote stored in a railroad tank car. There is no indication of creosote disposal on site, and records show that creosote remaining in the pressure chamber at the end of a treatment cycle was stored for future use. Upon completion of the railroad, the plant and mill were dismantled and sold. The only site features remaining are concrete pads and the boiler chimney.

6.2.2 Site 7 - Tarawa Terrace Dump

Tarawa Terrace Dump is a landfill located east of the sewage treatment plant between Tarawa Boulevard and Northeast Creek. Its size is estimated at 5 acres. The landfill was closed in 1972, but the years of operation are not known. As far as is known, no hazardous materials were disposed of in this facility. Only construction debris, sewage treatment plant filter media, and household trash are known to have been disposed.

6.2.3 Site 12 - Explosive Ordnance Disposal (G-4)

Site 12 covers approximately 300 acres. During the early 1960s, ordnance was disposed of by burning or exploding when it was found to be inert, unserviceable, or defective. Materials disposed of included ordnance, colored smokes, and white phosphorous. Any undestroyed residues were typically less than 1 pound.

6.2.4 Site 43 - Agan Street Dump

The Agan Street Dump is about 20 acres in size and is located near the old wastewater treatment plant. Boards, trash, fiberglass, and wastewater treatment plant sludge were disposed of on the ground surface. The years of operation are unknown.

6.2.5 Site 44 - Jones Street Dump

The Jones Street Dump is approximately 5 acres. It is located behind base housing on Jones Street. The dump was in operation in the 1950s, and received mainly debris, cloth, boards, and paint cans. However, small quantities of hazardous materials may also have been disposed of in the fill.

6.2.6 Site 54 - Crash Crew Fire Training Burn Pit

This 1.5-acre site within MCAS New River is located adjacent to the southwest end of Runway 5-23 near Building 3614. This AOC is believed to have been used in the mid-1950s for crash crew training. Contaminated fuels (principally JP-type and possibly leaded fuels) and waste fuels were used in the training exercises. Originally, the training was conducted on the ground surface with the area surrounded by a berm. Later, a burn pit was used which was lined in approximately 1975.

6.2.7 Site 63 - Verona Loop Dump

The Verona Loop Dump is estimated to be between 3 and 4 acres. It is believed that bivouac wastes were disposed of at this site, but the years of operation are not known. It is not believed that hazardous waste was disposed of at this site.

6.2.8 Site 65 - Engineer Area Dump

The Engineer Area Dump is 4 to 5 acres in size. Two separate disposal areas were identified: a battery acid disposal area and a liquids disposal area. The types of liquids involved are believed to be petroleum, oil, and lubricant products. In addition, the dump was used to burn construction debris. The dump was in operation from before 1958 until 1972.

6.2.9 Site 68 - Rifle Range Dump

The Rifle Range Dump is located west of Range Road approximately 2,000 feet west of the Rifle Range water treatment plant and 800 feet east of Stone Creek. This 3- to 4-acre area was used as a disposal site for various types of wastes, including garbage, building debris, waste treatment sludge, and solvents. The fill lies within a 30- to 40-acre area that showed, in aerial photographs, signs of previous disturbance. However, this disturbance may be related to logging activities. The depth of the fill area is approximately 10 feet, and the amount of material deposited has been estimated to be 100,000 cubic yards. An estimated 2,000 gallons of waste solvents were reportedly deposited.

This currently inactive landfill was utilized as a disposal facility for a period of 30 years from 1942 to 1972. The major concern is the potential for waste solvents to affect the groundwater quality beneath the site. Organic compounds were identified in the potable supply wells RR-45 and RR-97. Even though these wells are located upgradient from the site, it was suspected that continuous pumping of the wells may have drawn contaminants to the wells.

6.2.10 Site 75 - MCAS Basketball Court Site

The MCAS Basketball Court Site is located along the north side of Curtis Road. This AOC was reportedly a drum burial area that was used on at least one occasion in the early 1950s. The excavation as seen in an aerial photograph was an oval shaped pit approximately 90 feet long by 70 feet wide and was sufficiently deep to have encountered the water table. An estimated 75 to 100 55-gallon drums were placed in this pit. The drums reportedly contained a chloroacetophenone tear gas solution used for training. Additional organic chemicals, such as chloroform, carbon tetrachloride, benzene, and chloropicrin, may have been present in the solution. Degradation of the drums could have resulted in the release of the suspected materials into the groundwater. This was of particular concern due to the proximity of several water supply wells in the area, two of them being within 500 feet of the alleged disposal site.

6.2.11 Site 76 - MCAS Curtis Road Site

The MCAS Curtis Road Site is located in the vicinity of and along the north side of Curtis Road. The precise location of the site is unknown, and two possible locations have been identified based on interviews and aerial photography. This alleged dumpsite was reportedly used as a drum disposal area on two occasions in 1949. The estimated area of the disposal unit is 1/4 acre and approximately 25 to 75 55-gallon drums were allegedly involved. It is believed that the drums contained a chloroacetophenone tear gas agent similar to that allegedly buried in the MCAS Basketball Court Site (Site 75). Potential contaminants are chloroform, carbon tetrachloride, benzene, and chloropicrin.

6.2.12 Site 80 - Paradise Point Golf Course

The study area of this site consists of a 1-acre area at the back of the machine shop and the truck wash area at the Paradise Point Golf Course. The site contains an area of bare, hummocky soil, with a large soil mound. There are areas of dead and/or dying vegetation in the vicinity of the soil mound. In addition, there are unvegetated areas where soils have been disturbed. A drainage ditch runs from the truck wash area around the back of the machine shop.

In addition to the machine shop, which is a potential source of waste oils, the routine application of pesticides and herbicides on the golf course and the potential inadvertent disposal of excess pesticides and herbicides behind the machine shop may also have contributed to potential contamination in this area. The truck wash area consists of a concrete pad and sumps that collect washwater from the sprayers, but prior to the construction of this pad, the disposition of washwater may have been completely uncontrolled. The presence of dead vegetation indicates that, at a

minimum, waste herbicides may have been disposed of behind the machine shop. There is no indication that other chemicals have been used or disposed of in this area.

6.2.13 Site 82 - Piney Green Road VOC Area

The Piney Green Road VOC Area is a forested area between Lot 203 and Wallace Creek and appears to have been used as a disposal area at some point in the past. It is estimated to be 30 acres. There is visual evidence of debris piles and small depressions as identified by ES&E in the Site Summary Report, June 1990. This area is bounded on the northwest by Wallace Creek and is therefore a reasonable source of the observed VOCs in Wallace Creek.

6.2.14 Site A - MCAS (H) Officer's Housing Area

The MCAS (H) Officers' Housing Area site is located on the west bank of the New River. This area was identified during the second round of sampling conducted in 1986. Waste was identified eroding out of a cut bank along the New River in the vicinity of an officers' housing area. The materials were tentatively identified as hospital wastes. Various hospital waste materials were noted, including hypodermic needles and vials of white powder that were believed to contain a chlorine-based substance. No information was available regarding the volume of the waste or the mode of disposal.

6.3 SCOPE OF WORK

During FY 1991, SIs are planned for Sites 3, 7, 43, 44, 54, 63, 65, 80, and 82. Based on the results of the SIs, future RI/FS activities will be implemented for potentially contaminated sites. Additional SIs will be performed at Sites A, 12, 68, 75, and 76 in FY 1995 through FY 1997.

Product recovery design and construction activities at USTs at Sites 22 and 35, respectively, are also scheduled to be initiated in FY 1991 and FY 1992.

Most of the sites have been previously investigated in various stages of the NACIP Program, and there have been no sites identified that pose immediate threats to human health and the environment. The institutional controls that are in place at the facility (the existing base security) are adequate in providing the public with the proper protection.

6.4 SITE MANAGEMENT SCHEDULES

Figure 6-1 shows the tentative schedule for site inspections. Based on the results of the SI, future RI/FS activities may be implemented.

Figure 6-2 shows the Site Management Schedule for product recovery actions at the UST sites.

6.5 SCOPE OF WORK SUMMARIES

Scope of Work summaries for each of the SI and UST sites are presented in this section.

For SI sites, the scheduled start and scheduled complete dates are given by fiscal year, since an SI takes and estimated 6 months to complete from acceptance of final project plans to submittal of the draft SI report.

For UST sites where product recover is proposed, only the scheduled start fiscal year is given. Durations and scheduled complete dates cannot be estimated at this time because of the nature of these projects.

SITE	FISCAL YEAR PROJECT START						
	1991	1992	1993	1994	1995	1996	1997
3 OLD CREOSOTE PLANT	X						
7 TARAWA TERRACE DUMP	X						
43 AGAN STREET DUMP	X						
44 JONES STREET DUMP	X						
54 CRASH CREW FIRE TRAINING BURN PIT	X						
63 VERONA LOOP DUMP	X						
65 ENGINEER AREA DUMP	X						
80 PARADISE POINT (GOLF COURSE PESTICIDE AREA)	X						
82 PINEY GREEN ROAD VOC AREA	X						
A MCAS OFFICER'S HOUSING AREA					X		
12 EXPLOSIVE ORDINANCE DISPOSAL (G-4)						X	
75 MCAS BASKETBALL COURT SITE						X	
68 RIFLE RANGE DUMP							X
76 MCAS CURTIS ROAD SITE							X

NOTE: SITE INSPECTIONS TO BE COMPLETED WITHIN 6 MONTHS FOLLOWING NAVY APPROVAL OF CONTRACTOR WORK PLAN

FIGURE 6-1

SITE INSPECTIONS – TENTATIVE SCHEDULE
MCB CAMP LEJEUNE, NORTH CAROLINA

NUS CORPORATION

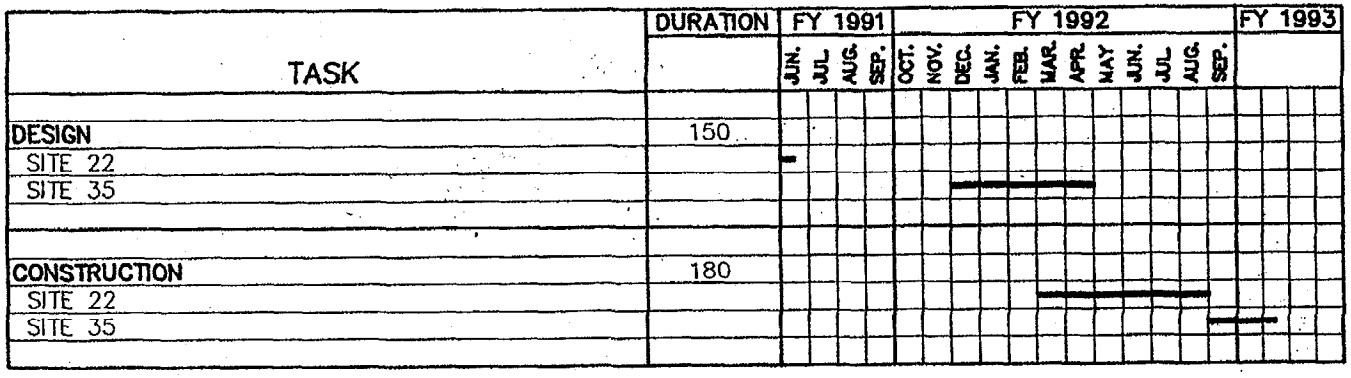

FIGURE 6-2

SITE MANAGEMENT SCHEDULE
PRODUCT RECOVERY AT UST SITES
MCB CAMP LEJEUNE, NORTH CAROLINA

NUS CORPORATION

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Old Creosote Plan
ACTIVITY:	Site Inspection
SITE NUMBER:	3

SCOPE OF WORK: Field investigation of soil and sediment to provide a general indication of whether the potential for an environmental problem exists. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Tarawa Terrace Dump
ACTIVITY:	Site Inspection
SITE NUMBER:	7

SCOPE OF WORK: Field investigation to determine whether the potential for an environmental contamination problem exists. Investigation to include surface geophysical survey, installation and sampling of monitoring wells, and soil sampling. Future RI/FS activities are dependent on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**

SITE NAME: Explosive Ordnance Disposal (G-4)

ACTIVITY: Site Inspection

SITE NUMBER: 12

SCOPE OF WORK: Field investigation to determine the potential for environmental contamination. Future RI/FS activities are dependent on the results of the SI.

FY91 DELIVERABLES: **DATE**

None

SCHEDULED START:	FY 1996	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1996	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Agan Street Dump
ACTIVITY:	Site Inspection
SITE NUMBER:	43

SCOPE OF WORK: Surface geophysical survey, monitoring well installation, groundwater sampling, soil sampling, and surface water/sediment sampling to determine the potential for environmental contamination. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Jones Street Dump
ACTIVITY:	Site Inspection
SITE NUMBER:	44

SCOPE OF WORK: Surface geophysical survey, monitoring well installation, groundwater sampling, and soil sampling to determine the potential for environmental contamination. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Crash Crew Fire Training Burn Pit
ACTIVITY:	Site Inspection
SITE NUMBER:	54

SCOPE OF WORK: Monitoring well installation and sampling, surface water/sediment sampling, and soil sampling to determine the potential for environmental contamination. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Verona Loop Dump
ACTIVITY:	Site Inspection
SITE NUMBER:	63

SCOPE OF WORK: Surface geophysical survey, installation and sampling of groundwater monitoring wells, soil sampling, and surface water/sediment sampling to determine whether hazardous materials may have been disposed in the landfill. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Engineer Area Dump
ACTIVITY:	Site Inspection
SITE NUMBER:	65

SCOPE OF WORK: Surface geophysical survey, installation and sampling of groundwater monitoring wells, soil sampling, and surface water/sediment sampling to determine whether hazardous materials may have been disposed in the landfill. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Rifle Range Dump
ACTIVITY:	Site Inspection
SITE NUMBER:	68

SCOPE OF WORK: Additional monitoring well to be installed downgradient of and in line with any probable contaminant plume that could be migrating from the primary dump area toward Stone Creek. Monitoring of existing supply wells and shallow monitoring wells. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES: **DATE**

None

SCHEDULED START:	FY 1997	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1997	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	MCAS Basketball Court Site
ACTIVITY:	Site Inspection
SITE NUMBER:	75

SCOPE OF WORK: Collection of data to determine potential for environmental contamination. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES: **DATE**

None

SCHEDULED START:	FY 1996	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1996	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	MCAS Curtis Road Site
ACTIVITY:	Site Inspection
SITE NUMBER:	76

SCOPE OF WORK: Collection of data to determine potential for environmental contamination. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES: **DATE**

None

SCHEDULED START:	FY 1997	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1997	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Paradise Point (Golf Course Pesticide Area)
ACTIVITY:	Site Inspection
SITE NUMBER:	80

SCOPE OF WORK: Soil, surface water, and sediment sampling to determine the potential for environmental contamination. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	Piney Green Road VOC Area
ACTIVITY:	Site Inspection
SITE NUMBER:	82

SCOPE OF WORK: Installation and sampling of groundwater monitoring wells, soil sampling, and surface water/sediment sampling to identify potential sources of contamination in Wallace Creek. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES:	**DATE**
Draft Work Plan	January 15, 1991
Draft Health and Safety Plan	January 15, 1991
Draft Sampling and Analysis Plan	January 15, 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF:	**Date SMP submitted to EPA**
SITE NAME:	MCAS Officer's Housing Area
ACTIVITY:	Site Inspection
SITE NUMBER:	A

SCOPE OF WORK: Collection of data to determine potential for environmental contamination. Future RI/FS activities may be implemented based on the results of the SI.

FY91 DELIVERABLES: **DATE**

None

SCHEDULED START:	FY 1995	**ACTUAL START:**	
SCHEDULED COMPLETE:	FY 1995	**ACTUAL COMPLETE:**	
DURATION:	6 Months		

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**

SITE NAME: Industrial Area Tank Farm

ACTIVITY: UST Investigation

SITE NUMBER: 22

SCOPE OF WORK: Product recovery. Drawdown water treatment.

FY91 DELIVERABLES:	**DATE**
Design Completed	June 1990
Construction Begins	March 1991

SCHEDULED START: FY 1991 **ACTUAL START:** FY 1991

SCHEDULED COMPLETE: **ACTUAL COMPLETE:**

DURATION:

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

AS OF: **Date SMP submitted to EPA**

SITE NAME: Camp Geiger Area Fuel Farm

ACTIVITY: UST Investigation

SITE NUMBER: 35

SCOPE OF WORK: Site assessment.

FY91 DELIVERABLES:	**DATE**
Site Assessment Report	September 1991

SCHEDULED START:	FY 1991	**ACTUAL START:**	FY 1991
SCHEDULED COMPLETE:	FY 1991	**ACTUAL COMPLETE:**	
DURATION:			

7.0 REMOVAL/INTERIM REMEDIAL ACTIONS

Removal actions are taken to prevent immediate and substantial harm to human health. Examples are fencing, removal of above-ground drums, and removal of buried drums, if identified during geophysical surveys. Interim remedial actions are conducted to prevent a potential release of contaminants and/or further migration of contaminants.

One removal action has been conducted in FY 1990. A fence was installed around the perimeter of Site 69.

An additional removal action will be conducted at Site 6. Specifically, this removal action is to remove the existing DDT drums visible above-ground at Lot 203. This removal action will be initiated in the second quarter of FY 1992.

Further removal/interim remedial actions will be pursued depending on the results of geophysical studies to be conducted at Sites 6 and 69. The Navy will continue to identify possible removal/interim remedial actions as site investigations proceed.

REFERENCES

Camp Lejeune Federal Facility Agreement (FFA). December 6, 1989.

ESE, May 1988. Characterization Step Report for HPIA.

ESE, May 1988. Characterization Step Report.

ESE, May 1988. Final Feasibility Study, HPIA Shallow Aquifer.

ESE, September 1990. Final Sampling Plan for RI/FS at HPIA and Limited Scope Investigation at Sites 6, 48, and 69.

ESE, September 1990. Final Site Summary Report for 22 Sites at Camp Lejeune.

ESE, September 1990. Final Work Plan for RI/FS at HPIA and Limited Scope Investigation at Sites 6, 48, and 69.

Johnson, Robert E. "Interim Pump-and-Treat Remediation of a Hydrocarbon-Contaminated Aquifer."

NEESA, April 1983. Initial Assessment Study of Marine Corps Base Camp Lejeune, North Carolina.

NUS, May 1991. Draft Final Health and Safety Plan for Site Inspection at Nine Sites.

NUS, May 1991. Draft Final Sampling and Analysis Plan for Site Inspections at Nine Sites, Vol. I of II.

NUS, May 1991. Draft Final Sampling and Analysis Plan for Site Inspections at Nine Sites, Vol. II of II.

NUS, May 1991. Draft Final Work Plan for Site Inspections at Nine Sites.

O'Brien and Gere, December 1988. Contaminated Groundwater Study.

O'Brien and Gere, October 1989. Product Recovery System Design, HPIA.

APPENDIX A

LIST OF ACRONYMS

APPENDIX A
LIST OF ACRONYMS

AMTRAC	Amphibious Tractor
AOC	Area of Contamination
BOQ	Bachelor Officers' Quarters
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DEHNR	Department of Environment, Health, and Natural Resources
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
FFA	Federal Facility Agreement
FS	Feasibility Study
FY	Fiscal Year
HPIA	Hadnot Point Industrial Area
IAS	Initial Assessment Study
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
NACIP	Navy Assessment and Control of Installation Pollutants
NPL	National Priorities List
OU	Operable Unit
PCB	Polychlorinated Biphenyl
POL	Petroleum, Oil, and Lubricants
PRAP	Proposed Remedial Action Plan
RA	Risk Assessment or Remedial Action
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RI	Remedial Investigation
ROD	Record of Decision
SI	Site Inspection
SMP	Site Management Plan
STP	Sewage Treatment Plant
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WTP	Water Treatment Plant or Wastewater Treatment Plant

APPENDIX B

DEFINITION OF TERMS

APPENDIX B
DEFINITION OF TERMS

Baseline Risk Assessment - Provides an evaluation of the potential threat to human health and the environment if no remedial action is taken.

Chlordane - A pesticide.

Chloroacetophenone (CN) - Tear gas.

Community Relations Plan (CRP) - Provides guidance for community relations activities implemented by the Marine Corps to keep the concerned public informed of the response action activities.

DDD, DDE, and DDT - Pesticides.

Diazinon - A pesticide.

Dieldrin - A pesticide.

Feasibility Study (FS) - Study undertaken to develop and evaluate options for remedial action. Includes identification and detailed evaluation of potential remedial alternatives.

Feasibility Study Report - Presents the results of the detailed analysis of alternatives.

Final Remediation Report - Describes how remediation goals were met, any operation and maintenance requirements, and recommendations for further action or monitoring.

Five-Year Review Report - Provides a summary of the findings of the 5-year review. For alternatives where hazardous substances remain at a site after remedial action, 5-year reviews are required to ensure that the remedy continues to provide adequate protection of human health and the environment.

Health and Safety Plan - Evaluates the risk to onsite workers associated with existing site conditions. Developed to ensure safe field activities and to identify potential problems and special site safety requirements.

HTH - Calcium hypochlorite.

JP-4 and JP-5 - Jet fuels.

Lindane - A pesticide.

Malathion - A pesticide.

Mirex - A pesticide.

National Priorities List (NPL) - List, compiled by EPA pursuant to CERCLA, of uncontrolled hazardous substance release sites that are priorities for long-term remedial investigation and response.

NPL Closeout Report - Begins the process for deletion of a site from the NPL. Contains all information required for the site deletion process.

Operable Unit - (OU) - Discrete portion of a site. Response actions for an operable unit comprise an incremental step toward comprehensively addressing site problems.

Predesign Report - Provides a summary of the factors of the selected remedy that will affect the design, construction, and completion of the remedial action, along with special design or implementation considerations.

Preliminary Characterization Summary - Summarizes location-specific data following the completion of the initial sampling and analysis activity.

Primary Documents - Includes those reports, plans, and studies that are major, discrete portion of RI/FS or RD/RA activities.

Proposed Remedial Action Plan (PRAP) - Highlights key aspects of the RI/FS Report. Provides a brief analysis of remedial alternatives under consideration. Identifies the preferred alternative. Provides the public with information on how they can participate in the remedy selection process.

Quarterly Progress Report - Describes the progress of onsite response actions.

Records of Decision (ROD) - Documents the remedial decision. Certifies that the remedy selection process was performed in accordance with CERCLA. Describes the technical parameters of the remedy and remediation goals. Provides the public with a consolidated source of information about a site, the chosen remedy, and the rationale behind the remedy selection.

Remedial Action (RA) - Cleanup actions, consistent with a permanent remedy, taken to prevent or minimize the release of hazardous substances so they do not migrate to cause substantial danger or risk to present or future human health or welfare or the environment.

Remedial Action Post Construction Report - Includes a final construction inspection report, a brief description of outstanding construction and/or testing items, a certification that the remedy is fully operational and functional as designed and planned, as-built design drawings and specifications, and a final operation and maintenance plan.

Remedial Action Progress Report - Describes progress during remedial action activities.

Remedial Action Work Plan - Provides a plan that explains in detail how the approved remedial action will be implemented.

Remedial Design (RD) - Technical analysis and procedures that follow selection of a remedy for a site. Results in a detailed set of plans and specifications for implementation of the remedial action.

Remedial Design Implementation Plan - Describes in general terms how the design will meet the scope and goals of the approved remedial action. Provides the schedules for submission of the predesign and design reports and related activities.

Remedial Design Report - Describes how the design will implement and accomplish the goals of the selected remedy. Provides the schedule for completion of various components of design and implementation of the work. Provides the design plans and specifications.

Remedial Investigation (RI) - Process undertaken to determine the nature and extent of contamination at a site. Consists of collecting data to characterize site conditions, determining the nature and extent of contamination, assessing risks to human health and the environment, and, if necessary, conducting treatability studies to evaluate treatment technologies being considered.

Remedial Investigation/Feasibility Study (RI/FS) Work Plan - Presents RI/FS tasks and associated schedules and cost estimates. Summarizes the initial evaluation of existing data and background information. Describes the general scope and objectives of the RI/FS.

Remedial Investigation Report - Presents the physical characteristics of a site. Defines the source(s) of contamination. Characterizes the nature and extent of contamination for all environmental media. Presents the results from the development and initial screening of alternatives.

Risk Assessment - Characterizes the risk from toxic and potential carcinogenic effects associated with site contamination. Develops performance goals and provides risk analysis for potential remedial alternatives.

Sampling and Analysis Plan - Includes a Field Sampling Plan that defines the sampling methods and decontamination procedures to be used during the RI. Also includes a Quality Assurance Project Plan that describes the quality assurance and quality control protocols necessary to ensure data validity.

Secondary Documents - Includes those reports, plans, and studies that are discrete portions of the primary documents and are typically input or feeder documents.

Site Inspection (SI) - Onsite investigation to determine whether there is a release or potential release of hazardous substances to determine the nature of the associated threats to human health or the environment.

Statement of Work - Provides a detailed description of site-specific work to be performed.

Treatability Study Report - Used to gather adequate site-specific and/or treatment data to assess the feasibility of a technology. May include testing to gather performance data and develop cost estimates to support the detailed analysis of alternatives during the feasibility study.

2,4-D and 2,4,5-TP - Pesticides.