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FISCAL YEAR 1994
SITE MANAGEMENT PLAN FOR
NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

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MODIFICATION 04

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Prepared by:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

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1.0 INTRODUCTION

This document presents the Fiscal Year 1994 Site Management Plan (SMP) for U. S. Naval Station Roosevelt Roads (NSRR). The purpose of the SMP is to present the planned activities to be conducted at Roosevelt Roads during Fiscal Year 1994 and to provide projection for long-term progress at the facility in accordance with the Department of the Navy's Installation Restoration Program (IRP). The document has been prepared by Baker Environmental, Inc. (Baker) for the Atlantic Division, Naval Facilities Engineering Command (LANTRDIV).

1.1 Description of the Facility

NSRR occupies part of the northern side of the east coast of Puerto Rico, along Vieques Passage with Vieques Island lying to the east about 10 miles off the harbor entrance. The north entrance to NSRR is about 35 miles east along the coast road (Route 3) from San Juan. The closest large town is Fajardo (population about 37,000), which is about 10 miles north of NSRR off Route 3. Ceiba (population about 17,000) adjoins the west boundary of NSRR.

The NSRR occupies over 33,500 acres, with some of the holdings being prepared for release to the Commonwealth of Puerto Rico. NSRR has administrative and command responsibilities for some operations separated from the main base and on Vieques Island.

The primary mission of NSRR is provision of full support for Atlantic Fleet weapons training and development activities.

The site of NSRR was first considered for location of a Naval Base in 1919 when no major facilities existed in the area. No development of the area was undertaken until early in the United States involvement in World War II, with the Naval Operating Base being commissioned in 1943 and finally redesignated a naval station in 1957.

2.0 OPERABLE UNIT DESCRIPTIONS

An "Operable Unit" is a group of areas (or single area) that have common characteristics, contamination, or geographical location and the investigation/remediation of which comprises an incremental step toward comprehensively addressing site problems. Operable units are a management tool used for organizing SWMUs (or Areas of Concern) based on a variety of criteria, including (but not limited to):

- Complexity of problems associated with the SWMUs
- Geographical proximity of SWMUs
- Scheduling considerations (e.g., first-phase RFI)

This section identifies the Operable Units at Roosevelt Roads where RFI activities are or will be implemented.

The SWMU descriptions are based on information presented in the following reports:

- Initial Assessment Study (IAS) of Naval Station Roosevelt Roads, Puerto Rico, September 1984, Naval Energy and Environmental Support Activity (NEESA).
- Phase II RCRA Facility Assessment (RFA) of the U.S. Naval Station Roosevelt Roads Facility, Roosevelt Roads, Puerto Rico, November 1988, A. T. Kearney, Inc.
- Evaluation of Data from First and Second Rounds of Verification Sample Collection and Analysis, April 1988, Environmental Science and Engineering, Inc. (ESE).
- Remedial Investigation/Feasibility Study for Site 15 Naval Station Roosevelt Roads, Puerto Rico, prepared for Atlantic Division Naval Facilities Engineering Command by Versar, Inc., May 15, 1992.
- Remedial Investigation/Feasibility Study for Site 16 Naval Station Roosevelt Roads Puerto Rico, prepared for Atlantic Division Naval Facilities Engineering Command by Versar, Inc., May 15, 1992.
- Installation Restoration Program, Naval Station Roosevelt Roads, Puerto Rico, Technical Review Committee Meeting Minutes, July 15, 1992, Atlantic Division

Naval Facilities Engineering Command.

- Technical Review Committee Meeting Minutes, February 14, 1989.
- Draft Final Summary and Technical Evaluation Review of Work Performed at 51 SWMUs and AOCs, U. S. Naval Station, Roosevelt Roads, TRC, 1993.

2.1 Operable Unit 1

Operable Unit (OU) 1 is comprised of the solid waste management units (SWMUs) that require first phase soil investigations. The SWMUs that comprise OU 1 are listed on Table 2-1. Each SWMU is described in the subsections below.

2.1.1 SWMU 6 - Building 145

This SWMU comprises IR Site 11. The building is a bunker, approximately 60 yards long, 7 feet high, and 8 feet wide with three openings to the surface through the roof. The openings are covered with dilapidated wood structures. There is one entrance at ground level. The 1984 IAS team reported the presence of approximately sixty 55-gallon drums, one hundred 5-gallon pails, and a number of other small containers (NEESA, 1984). The condition of the containers ranged from being intact and neatly stacked to randomly placed and leaking (A.T. Kearney, Inc., 1988). The 1984 IAS Report stated that the drums and other containers had been in the building for sometime, probably since 1957. Some of the materials identified by the IAS team included spray paint, olive drab paint, black boot polish and some adhesives (NEESA, 1984). The IAS team concluded that the majority of the material (approximately 2,000 gallons) could be classified as hazardous (NEESA, 1984).

In 1988, the RFA Visual Site Inspection (VSI) team reported that Building 145 was empty except for some protective clothing and some water on the floor. There were several old paint covered gloves and pieces of clothing, broken pallets and several empty paint cans outside [the] unit (A.T. Kearney, Inc., 1988). The RFA VSI team indicated that there was no evidence of a release to the environment.

The 1993 reinspection found conditions to be similar to those of 1988.

TABLE 2-1

SWMUs COMPRISING OPERABLE UNIT 1

1st phase RPT required at these SWMUs.

SWMU	Name
6	Building 145
12	Fire Training Pit Oil/Water Separator
13	Old Pest Control Shop/Building 258
14	Fire Training Pit Area
23	Oil Spill Separator Tanks
24	Oil Spill Oil/Water Separator and Adjoining Pad
25	DRMO Storage Yard
26	Building 544 Area
29	Industrial Area Wastewater Plant
30	Former Incinerator Area
31	Waste Oil Collection Area/Buildings 31 and 2022
32	PWD Storage Yard/Battery Collection Area/Building 31
33	AIMO Storage Pad/Building 379
37	Waste Oil Storage Area/Building 200
41	Seabee Pesticide Rinse Rack
46	Pole Storage Yard Covered Pad
50	Storage Area Behind Building 3166
51	New AIMO Storage Pad/Building 379
52	Drum Storage Pad Near Building 3158
55	Area of Concern C

2.1.2 SWMU 12 - Fire Training Pit Oil/Water Separator

This SWMU began operations in 1983; however, the 1984 IAS report does not address this SWMU. The first mention of this SWMU is in the 1988 RFA report. According to the RFA, the fire training pit oil/water separator is an inground concrete tank that measures approximately 7 feet x 30 feet x 10 feet deep. Waste oils are burned at the Fire Training Pit during training exercises, the excess of which is collected in the oil/water separator. Water from this unit is pumped to the Sewer Drainage System (SWMU 38) to be processed by one of the Naval Station wastewater treatment plants. Oils from this unit are pumped back into the Fire Training Pit (SWMU 14). The VSI team observed a ground level opening that was covered by heavy grating. The VSI team also noted an area of dead grass, adjacent to the oil/water separator, and oil stains on the curbing and guardrail uprights (A.T. Kearney, Inc., 1988).

No evidence of releases was seen during the 1993 reinspection.

2.1.3 SWMU 13 - Old Pest Control Shop/Building 258

This SWMU comprises IR Site 18. The IAS report describes this SWMU as the following:

- The pest control shop was located at Building 258 from the late 1950s through 1983. Pesticides were stored in Building 258 and also on the parking apron. In 1976, a 55-gallon drum of Malathion, which was stored outside the building, ruptured and the contents spilled onto the ground, eventually washing into the drainage ditch in back of the building. This same ditch received rinse waters from the cleaning of pesticide equipment over a storm drain which discharged to the ditch. Excess pesticides were also poured into this ditch. Past environmental engineering surveys cite numerous aquatic kills due to pesticides entering the ditch. The area surrounding the building is devoid of vegetation, although the drainage ditch does not show any signs of stressed vegetation.
- Pesticides used in the past include DDT, Paris Green, maldane, malathion, and chlordane. There is no information available, either from records or interviewees, regarding the amounts or concentrations of the pesticides used (NEESA, 1984).

In 1988, a RFA was performed at this SWMU. The VSI team noted that a faint but discernible pesticide odor was present behind the building and inside what was then the Diving Club

pump room. They did not observe any signs of stressed vegetation. The president of the diving club, Mr. Seufert, reported to the VSI team that club members had decontaminated the inside of the building before occupying it. According to Mr. Seufert, decontamination involved washing the inside walls and floor with bleach before sealing with a vinyl coating. The meeting room was then tiled, but the pump room was not (A.T. Kearney, Inc., 1988).

In 1988, ESE performed two rounds of verification sampling. Fifteen soil samples were collected in Round 1 and analyzed for pesticides at this site. Several pesticides, including chlordane were detected in the surficial soils in the area adjacent to Building 258. In addition, eight sediment samples were collected at this site (two in Round 1 and six in Round 2) and analyzed for pesticides. Chlordane and other pesticides were detected in the sediment samples collected from the drainage ditch which conveys storm water runoff from the site. A total of eight surface water samples were also collected at this site (two in Round 1 and six in Round 2) and analyzed for pesticides. Chlordane and other pesticides were detected in the surface water samples collected from the drainage ditch which conveys storm water runoff. Three shallow monitoring wells were installed at the site and groundwater samples were collected in Round 2. Groundwater samples were analyzed for pesticides. A low concentration of DDD (0.0017 µg/L) was detected in one of the three monitoring wells at the site (Technical Review Committee Meeting Minutes, 1989).

Since the 1988 RFA, the building has been demolished. The recent reinspection of the site found no visible signs of releases.

2.1.4 SWMU 14 - Fire Training Pit Area

This SWMU comprises IR Site 17. The IAS report indicated the following about SWMU 14:

- The crash crew training area was operated by the Air Operations Department from early 1960s through 1983.
- Two unlined pits were used in the past for fire fighting training. The first pit, which was approximately 40 feet in diameter, was used from the early 1960s through the beginning of 1983. Assuming 20 years of operation, about 120,000 gallons of waste solvents, fuels, and oils were placed in the pits and set on fire for fire fighting training. Also burned were wood, trash, plastic, fuel filter elements, oily rags, and other debris. The fires were extinguished using aqueous film-forming foam (AFFF) and potassium

bicarbonate (Purple K). Past aerial photographs show drainage from this pit to the ditch along the runway shoulder. The new fire training pit was built at the same location as the old pit. When the new pit was built, all of the oil-stained, contaminated soil was excavated and most likely disposed of in the base landfill.

- The second pit was used temporarily during the construction of the new fire training pit in 1983. This unlined gravel pit has a diameter of 200 feet and was used approximately six times. Approximately 3,000 gallons of waste fuel, oil, and solvents were burned in this area. Only small amounts of fuel were allowed to soak into the ground (NEESA, 1984).

In 1988, a RFA inspection was performed at this SWMU. During the inspection, the VSI team observed that within the concrete curbing of the pit was a metal structure (what appeared to be the tank from a railroad tank car and large pieces of scrap metal) underlain by a layer of ricks which rested on the concrete lining. The metal structure, rocks and concrete curbing were completely black. Immediately adjacent to the pit was an area of darkly stained soil measuring approximately 40 feet by 100 feet. Vegetation was observed to be growing in the stained area adjacent to the pit (A.T. Kearney, Inc., 1988).

The 1993 reinspection found conditions similar to those seen in 1988.

2.1.5 SWMU 23 - Oil Spill Separator Tanks

Located approximately 100 feet inshore from the fuel pier are three oil spill separator tanks which process waste pumped in from the Ships Waste Off-load Barges (SWMU 22). The oil spill separator tanks are large steel boxes that are underlain by a concrete pad with an 8-inch curb (A.T. Kearney, Inc., 1988). Each box has a pipe that extends out laterally from the bottom.

After the water settles to the bottom of the tank, a valve on the pipe is opened, and the contents are allowed to spill out until all the water has been removed. The separated oil is then transferred to the Oil Spill Oil/Water Separator (SWMU 24). This added process of separation is necessary because the majority of liquid pumped up by Donuts (SWMU 21) and SWOBs (SWMU 22) consists of sea water. Each oil spill separator tank is constructed of steel and, according to facility representatives, has a 2,000-gallon capacity (A.T. Kearney, Inc., 1988).

The VSI team noted black staining on the concrete pad, curbing and areas of asphalt around the SWMUs both in 1988 and 1993.

2.1.6 SWMU 24 - Oil Spill Oil/Water Separator and Adjoining Pad

According to the 1988 RFA report, the oil spill oil/water separator is a below ground structure built of concrete with steel grating covering the top at ground level (A.T. Kearney, Inc., 1988). Facility representatives reported to the VSI team that the oil/water separator has a capacity of 1,500 gallons. This unit receives discharge from the Oil Spill Separator Tanks (SWMU 23). After separation, the waste oil is removed by DRMO. The final disposal of wastewater was not determined by the VSI team (A.T. Kearney, Inc., 1988). The VSI team also did not determine if an overflow control device existed at this SWMU. They did not observe any sign of a release at the time of the VSI.

Minor staining around the edge of the separator was seen in 1993.

2.1.7 SWMU 25 - DRMO Storage Yard

This unit is an area measuring approximately 40 feet x 100 feet and is located immediately adjacent to the Ignitable Storage Facility (SWMU 18) (A.T. Kearney, Inc., 1988). In 1988, a facility representative stated to the VSI team that this unit was used for hazardous waste storage prior to the use of the Ignitable Storage Facility (SWMU 18) and DRMO Hazardous Waste Storage Facility (SWMU 17) (A.T. Kearney, Inc., 1988). A facility representative told the VSI team that this SWMU was being used to store hazardous materials at the time of the inspection. Evidence of past release was observed during the VSI. Several oil stains, the largest measuring approximately 20 feet in diameter, were observed (A.T. Kearney, Inc., 1988).

In 1993, it was found that the area is now used as storage of raw material.

2.1.8 SWMU 26 - Building 544 Area

This SWMU is comprised of approximately twenty-five 30-gallon drums, some of which had polyethylene liners (A.T. Kearney, Inc., 1988). The 1988 RFA report indicates that these drums were located behind Building 544 and were surrounded by thick brush (A.T. Kearney,

Inc., 1988). The VSI team noted that some of the drums contained engine lubricating oil, and that one of the labels had the number 9150-231-6654 stamped on it (A.T. Kearney, Inc., 1988). The VSI team could not identify the contents in all of the drums because not all of the drums were labeled. The VSI team also observed a tar-like substance leaking onto the ground (A.T. Kearney, Inc., 1988).

In 1992, the Navy conducted a site inspection of this SWMU. The site has changed since the 1988 RFA was issued. Building 544 had been demolished (in approximately 1990). The concrete foundation of Building 544 remains. The drums had been removed. No evidence of stained soil was observed during the 1993 TRC reinspection (TRC, 1993).

2.1.9 SWMU 29 - Industrial Area Wastewater Plant

The 1984 IAS report indicates that this plant (Building 1758) has a capacity of 0.937 mgd using the trickling filter system with aerobic digestion. It serves the southeastern section of the base, including the Public Works Complex, and has received all ship-generated sewage since 1980. Little, if any, wastewater other than domestic sewage is processed here. Sludge dewatering is accomplished in the sludge drying beds, and is delivered to the Adjacent Landfill (SWMU 3) at a rate of 60 tons per year (dry sludge). Chlorinated secondary treated sewage meeting local water quality standards is discharged to the adjacent coastal waters through a 14-inch submarine outfall line (NEESA, 1984).

The 1988 VSI team indicates that the facility processes approximately 0.7 mgd and that this SWMU was issued a NPDES permit in March 1986. During their inspection, the VSI team observed that effluent was stored in a plastic-lined aeration lagoon prior to processing (A.T. Kearney, Inc., 1988). This SWMU has been in operation since 1970 (A.T. Kearney, Inc., 1988).

Since April 1990, this plant has been operating under a Federal Facility Compliance Agreement (FFCA) for NPDES violations. Prior to the issuance of the FFCA, EPA required the Navy to conduct a study to determine the cause of violations and determine if such violations were the result of industrial discharges to the sanitary system. Specific industrial sources were identified, and the industrial wastewater for such sources will be pretreated by equipment currently under construction. The industrial source is primarily in the Forrestal Collection Area (SWMU Site 29). The specific industrial sources introduce only oil or fuel into the system. Under the FFCA, the Navy is required to upgrade this plant to meet the current

NPDES limit and future Water Quality Standards (WQS) for nutrient removal and toxicity. Plant upgrades are to be completed in August 1994. In order to ensure compliance with the upcoming NPDES permit to be issued, the Navy conducted a piece by piece inspection of this plant. In February 1992, the facility was inspected for detail repairs of tankage and equipment, pipe valves, pumps, etc. Although structural integrity was not the specific focus of the inspection, no problems of this nature were detected in February 1992. Based upon the numerous times the units have been taken out of service for sludge removal and equipment repair, the Navy has no reason to suspect leaks due to structural integrity. It might also be noted that concrete tankage in the Navy is designed by the working stress method which is a design which minimizes the likelihood of cracks (comparable to American Concrete Institute Code Section 350).

The Navy made an application for upgrading the plant to tertiary treatment in October 1990 as is required under the FFCA for NPDES permit modifications. The wastewaters were, at that time, characterized to the satisfaction of EPA Region II. Also, full characterization of the wastewater was done in 1988 for NPDES violations. At that time, no hazardous contingents were detected. In order to comply with the new TCLP ruling, the sludge was tested in January 1992 for the presence of hazardous waste using TCLP. Plant residuals currently pass TCLP criteria for hazardous waste. Current activity policy is that no hazardous waste may be introduced into the system (TRC, 1993).

2.1.10 SWMU 30 - Former Incinerator Area

"Installed in 1973 and dismantled in 1983, this unit was used to burn classified material, contaminated diesel oil, JP-5 fuel (usually mixed with some lube oil), solvents, and sludge residue" (A.T. Kearney, Inc., 1988). The 1984 IAS study estimated that 600 gallons of oil per week were processed at this SWMU.

In 1988, a facility representative reported to the VSI team that in 1984 the presently visible unit was installed in the same location as the dismantled incinerator and has never been activated. There was no indication through visual observation by the VSI team that the new SWMU had ever been active (A.T. Kearney, Inc., 1988).

The 1993 reinspection found conditions similar to those of 1988 with the exception of an UST removal underway. Approximately 50 feet from the unit, a tank, which was fuel supply for the

incinerator, had been removed. The tank appeared intact and the excavation was open pending soil analytical results. Work was performed under EQB UST regulations.

2.1.11 SWMU 31 - Waste Oil Collection Area/Buildings 31 and 2022

This SWMU is part of IR Site 10. According to the 1988 RFA, the Transportation Shop services Public Works Department vehicles inside Building 31 and in the yard just north of the building. Approximately 30 yards from the Transportation Shop warehouse is a concrete pad used for the temporary storage of 55-gallon waste oil drums, although none were present at the time of the VSI. A 6-inch concrete curb surrounds the pad which measures approximately 13 feet by 20 feet. A steel drainage pipe with a broken valve is set into the curbing, and at the time of the 1988 VSI, was in the open position. The yard surrounding this unit is asphalt. No leakage was evident at the time of the VSI; however, with the drain pipe valve broken in the open position any spills on the concrete pad would flow directly onto the Public Works Department yard (A.T. Kearney, Inc., 1988).

The 1984 IAS report does not specifically discuss SWMU 31 but discusses Building 31. According to the IAS report, the area around Building 31 was used for open storage of drummed material. The IAS report noted the following:

- Near Building 31 approximately 50 drums were found within the vegetation bordering the north side of Building 31 transportation lot. Most of the drums are full to partially full of unknown contents. The Public Works Department attempted to remove some of these drums; however, the condition of the drums resulted in massive leakage. The spill contaminated a flatbed truck before running onto the ground, staining an approximately 10-foot-diameter circle of soil. An extremely strong creosote or solvent odor was present. These drums and the spill can be easily accessed by base personnel. The spilled material was identified by the Navy as asphalt, and will be sent to DPDO for sale or reuse. Three drums were not identified and are being held (NEESA, 1984).

In 1988, ESE performed two rounds of verification sampling for IR Site 10 (SWMUs 31 and 32, and AOC B). Groundwater samples were collected from eight wells. The results of the analyses indicated that presence of low levels of organic compounds and the presence of some metals at levels that exceeded primary drinking water standards and ambient water quality criteria.

The pad was in full use in 1993 and heavy staining both on the pad and around the perimeter was present.

2.1.12 SWMU 32 - PWD Storage Yard/Battery Collection Area/Building 31

This SWMU is part of IR Site 10. It consists of a number of batteries that were stored on the bed of a truck and on a pallet on the ground. This SWMU is located approximately 100 yards northeast of the transportation shop warehouse. The 1988 VSI team noted that several dozen batteries were in various stages of decay, but that none of the batteries were corroded to the point of leakage. Most, according to the VSI team, appeared to contain electrolyte. The VSI did not observe any evidence of release.

The 1984 IAS report does not address SWMU 32 specifically, but instead discusses general site conditions around Buildings 25 and 31. The 1984 report notes the following:

- Building 25 was used from 1951 until the structure collapsed in 1979 by the Public Works Supply Department for temporary storage of materials to be turned over to (Defense Property Disposal Office) DPDO. According to aerial photographs, the entire area around the building was used for open storage of drummed material from at least 1957.
- The entire area in and around the collapsed building is overgrown with vegetation, although historical aerial photographs show the area to be relatively free of vegetation other than ground cover through 1977. Materials found in and around Building 25 included 20 to 25 apparently empty to partially filled 55-gallon drums; ten to fifteen 5-gallon pails; office furniture; mechanical devices; construction rubble; industrial gas cylinders; asbestos sheeting; fiberglass buoys; and transformers.
- Of particular interest were the 5-gallon pails, the drums, and a large transformer found at the collapsed building. The 5-gallon pails had become corroded, exposing a substance similar to that found at the Langley Drive site. The compound has a green-colored crust about 1/2-inch thick, encasing a white material with the consistency of semi-dry plaster. A large transformer is lying on its side at the east corner of the building. No evidence of oil leakage was apparent.

- Material was also found along the various access roads and consisted of drums, office furniture, asbestos, rubber, and a pole-mounted transformer from which oil has leaked. Some of these areas exhibited stressed vegetation. There are several other areas of disposed material (about five acres) between the access routes. A 1957 photograph was taken by a tenant. Activity shows that the area around Building 145 was used as a general storage area for several hundred drums. During the IAS team's overflight, CONEX containers were also found in a clearing at this area.

In 1988, ESE performed two rounds of verification sampling for IR Site 10 (SWMUs 31 and 32, and AOC B). Groundwater samples were collected from eight wells. The results of the analyses indicated that presence of low levels of organic compounds and the presence of some metals at levels that exceeded primary drinking water standards and ambient water quality criteria.

In 1993, the area was found to have been moved. It now contains a fiberglass box for battery accumulation and a number of drums containing fuel-contaminated soil.

It should be noted that the 1993 reinspection found no evidence of release in the former SWMU location.

2.1.13 SWMU 33 - AIMD Storage Pad/Building 379

According to the 1988 RFA this unit is located outside, against the northern wall of Building 379. It was described to the VSI team by facility representatives as a temporary hazardous waste storage area (A.T. Kearney, Inc., 1988). This storage area is a curbed concrete pad with a manual overflow control valve. The wastes stored at this SWMU are generated by Aircraft Intermediate Maintenance Department (AIMD) maintenance, and according to the IAS report include wastes generated from cleaning, painting, paint stripping, minor calibration, complete overhaul of avionic components, and battery cleaning and recharging operations (A.T. Kearney, Inc., 1988). During their visit, the VSI team observed beryllium waste, hydraulic fluid and solvents generated from aircraft maintenance (A.T. Kearney, Inc., 1988). The VSI team also observed minor amounts of unidentified damp white powder in the grass several feet outside the storage pad.

In 1988, ESE performed two rounds of verification sampling and analysis.

One soil sample was collected as a background sample in Round 1. This sample was analyzed for oil and grease, lead, VOA, xylene, MEK, and EDB. Elevated levels of oil and grease (8.21 mg/kg) were detected in this soil sample.

A total of six sediment samples were collected for Site 8 (3 samples during each round). Oil and grease levels ranged from 59-4740 mg/kg.

A total of eight surface waters were collected from Site 8 during both Rounds. Three were collected in Round 1 and five during Round 2. Significant levels of oil and grease (ranging from 5 to 102 μ /L) were found in Round 1 samples. Oil and grease were not detected in Round 2 samples. The levels of oil and grease detected were attributed to Building 200 (Technical Review Committee Meeting Minutes, 1989).

The 1993 inspection found the unit empty with some minor staining present in the center of the pad.

2.1.14 SWMU 37 - Waste Oil Storage Area/Building 200

According to the 1988 RFA, this unit consisted of nineteen 55-gallon drums resting on wooden pallets, situated on a raised, covered concrete pad behind Hanger 200. The drums were observed by the VSI team to contain waste gasoline and lubricating oil from AIMD operations.

During the 1988 VSI, minor oil stains were observed on the concrete pad, and a minor area on the nearby grass was observed to have stressed vegetation (A.T. Kearney, Inc., 1988).

In 1988, ESE performed two rounds of verification sampling and analysis.

One soil sample was collected as a background sample in Round 1. This sample was analyzed for oil and grease, lead, VOA, xylene, MEK, and EDB. Elevated levels of oil and grease (8.21 mg/kg) were detected in this soil sample.

A total of six sediment samples were collected for Site 8 (3 samples during each round). Oil and grease levels ranged from 69-4740 mg/kg.

A total of eight surface waters were collected from Site 8 during both Rounds. Three were collected in Round 1 and five during Round 2. Significant levels of oil and grease (ranging

from 5 to 102 µg/L) were found in Round 1 samples. Oil and grease were not detected in Round 2 samples (Technical Review Committee Meeting Minutes, 1989).

In 1993, the area was found to be well managed. A minor area of stressed vegetation was seen at the rear of the unit. Fresh soil from the area yielded measurable organic vapors.

2.1.15 SWMU 39 - Building 3158/Former Battery Drain Area

According to the 1988 RFA, this unit consists of a storage building and covered battery drainage area. This building stores waste batteries and battery acid that are wastes generated by Naval Mobile Construction Battalion (NMCB or "Seabees") operations. The metal battery drain tank (shaped like a funnel) is underlain by a curbed concrete pad. Battery contents are poured into the drain tank and the battery acid is caught below in a container. The curbing around the pad is cracked and stained, indicating that there have potentially been past releases to the soil (A.T. Kearney, Inc., 1988).

The Navy, during a site visit in March 1992, observed no visible signs of release to the soils. This area is no longer used for storage of spent batteries.

The area is no longer used for battery storage according to the 1993 visit. It is now employed to store flammable materials. The original pad could not be found.

2.1.16 SWMU 41 - Seabee Pesticide Rinse Rack

According to the 1988 RFA, this unit was observed during the VSI to be an uncurbed concrete slab measuring approximately 12 feet x 20 feet that is located directly adjacent to the Seabee Pesticide Storage Building (Building 3152). The drain within this slab is made up of four strips (6 inches wide). Each strip runs parallel to and is located within the perimeter of the slab to form an inner rectangular "frame." The drain is covered by steel grating. The VSI team was informed by naval personnel that this unit is most commonly used to rinse out the spray trailer which usually contains a mosquito pesticide (A.T. Kearney, Inc., 1988).

The VSI team did not determine if the expired pesticides were washed down the drain of the SWMU or were sent to DRMO. The VSI team did not observe any signs that would indicate a release into the environment (A.T. Kearney, Inc., 1988).

The site is presently unused. Recent dye testing indicates the drain for this unit flows to the base sanitary sewer system which discharges to a permitted outfall.

2.1.17 SWMU 46 - Pole Storage Yard Covered Pad

According to the 1988 RFA report, this unit was cited in the NACIP report as a Public Works Department hazardous waste storage area that had been used to store transformers and 55-gallon drums of PCB-contaminated material. The NACIP report further stated that the area showed evidence of oil spillage. A facility representative confirmed that this unit had formerly been used to store transformers during the 1988 VSI. The VSI team observed that this unit was a covered concrete pad, and that it was used for the storage of products including insulators, telephone poles, small cardboard boxes of electrical equipment, and several full 5-gallon pails, one marked as electrical lubricant. The VSI team also noted that the unit was surrounded by a cyclone fence. Telephone poles were piled near the entrance. No evidence of release was observed by the VSI team (A.T. Kearney, Inc., 1988).

In 1993, the pad was clean with only some wire present.

2.1.18 SWMU 50 - Storage Area Behind Building 3166

SWMU 50 consists of an open air, fenced area at the southwest corner of Building 3166, where several 55-gallon containers of assorted materials (one of malathion), plus three transformers, are stored either directly on the ground, or on pallets. This SWMU was first identified during the 1993 follow-up inspection. No visual evidences of releases were observed.

2.1.19 SWMU 51 - New AIMD Storage Pad/Building 379

SWMU 51 consists of a curbed concrete storage pad located outside Building 379. This storage pad is roofed and enclosed with a cyclone fence. It was first identified during the 1993 follow-up inspection, and is presently utilized by the AIMD facilities in place of SWMU 33. Also present at this SWMU is a 200-gallon tank which touches the storage pad, but is outside the curbed area. The entire pad area is surrounded by asphalt pavement. During the 1993 follow-up inspection, oil stains were observed emanating from two drain valves in the curb surrounding this pad, and from the 200-gallon tank located outside the pad curb.

2.1.20 SWMU 52 - Drum Storage Pad Near Building 3158

SWMU 52 consists of an open air, uncurbed, concrete storage pad which was first identified during the 1993 follow-up inspection. It was described as associated with Building 3158 (SWMU 39); however, it has been accorded separate SWMU status. During the 1993 follow-up inspection, this storage pad contained approximately one hundred and twenty (120) 55-gallon drums of various oils, antifreeze, and other materials. No stains or other evidence of release were observed; however, large structural cracks were present in the concrete pad. Also, the absence of any curbing around the pad, would allow released hazardous constituents to flow onto the adjacent soil.

2.1.21 SWMU 55 - Area of Concern (AOC) C

The 1988 RFA report describes this AOC as follows:

- This AOC is comprised of two raised concrete pads that , at the time of the VSI, were used for storage of transformers. During the VSI, 40 transformers were observed to be stored on the storage pad to the south, which measured approximately 20 feet x 50 feet. This pad was covered by ripped canvas stretched over a wooden frame. The north pad was uncovered and contained at least 25 transformers and 20 to 40 batteries. The products stored at this unit were in good condition. Standing oil inside the north pad and release to the soil through a crack in the concrete were observed. Transformers of various sizes were scattered around both the south pad and the north concrete pad.

Essentially the site remains as found in 1988 except more transformers are present. Site representatives indicated that transformer removal was imminent (within 30 days).

2.2 Operable Unit 2

Operable Unit 2 consists of the following SWMUs:

- SWMU 7 - Tow Way Road Fuel Farm
- SWMU 8 - Tow Way Road Sludge Burial Pits
- SWMU 9 - Tank 212-217 Sludge Burial Pits

These SWMUs all will require full RFIs according to the draft permit provisions. They are also related by the similarity of the problem associated with each SWMU (petroleum hydrocarbon contamination). Each SWMU is described in the subsections below.

2.2.1 SWMU 7 - Tow Way Road Fuel Farm

This SWMU is located north of Tow Way Road on a hill that overlooks Ensenada Honda, and is comprised of a number of fuel storage tanks. Numerous spills, leaks and sludge disposals have occurred here since 1957 (NEESA, 1984). This site, SWMU 7, has been combined with SWMU 8 in other reports as IR Site 12.

In 1984, the IAS Study reports the following history for this SWMU. Over a 15 to 20 year period, approximately 420,000 gallons of diesel fuel leaked from underground storage tanks 56A and 56B. These tanks were removed in 1984 (A.T. Kearney, Inc., 1988). Diesel fuel was observed by the NACIP IAS team on top of the groundwater that had seeped into the holes where the tanks had been removed (A.T. Kearney, Inc., 1988). In 1957 or 1958, a Tank 82 fuel line burst, spilling approximately 420,000 gallons of Bunker C fuel. This spill reportedly ran downhill into Ensenada Honda. In 1978, approximately 65,000 gallons of diesel fuel leaked from Tank 1080. In 1986, an estimated 91,000 gallons of JP-5 (unleaded aviation kerosene) leaked from Tank 85 (A.T. Kearney, Inc., 1988). Approximately 70,000 gallons of this spill reached Ensenada Honda.

In 1988, the RFA VSI team observed that there were two earthen retaining walls with gates at the bottom of the hill where the tanks are located. They also noted a permanent boom on the Tow Way Road Fuels farm storm water outfall. In addition, the VSI team noted areas of dried sludge directly downhill from Tank 82, vapors rising from the manhole over Tank 84, and fluid dripping steadily from a pipe that extended laterally from Tank 83. Vegetation was stressed in the area of this pipe (A.T. Kearney, Inc., 1988). Facility representatives reported to the VSI team that a "minor" spill from Tank 83 had occurred.

The 1988 ESE report does not address SWMU 7 specifically, but addresses Site 12 (SWMU 7 and SWMU 8) together. In 1988, ESE performed 2 surface water, 2 sediment, and 12 groundwater samples were collected and analyzed. In addition, 97 soil borings were installed, 20 in Round 1 and 77 in Round 2. ESE reports that significant concentrations of oil and grease were detected in Round 1 sediment and surface water samples, but not in the Round 2 sediment and surface water samples. The Round 2 surface water sample contained lead, but

the concentration was below ambient water quality criteria. Round 1 groundwater samples indicated elevated levels of benzene, toluene, oil and grease, whereas Round 2 groundwater samples indicated the absence of oil and grease, but the presence of lead and an increased concentration of benzene. Numerous soil borings were noted as being contaminated with fuel (Technical Review Committee Meeting Minutes, 1989).

In 1993, conditions remain similar to those seen previously with the exception that the booms and areas of exposed soil have been removed.

2.2.2 SWMU 8 - Tow Way Road Sludge Burial Pits

The Tow Way Road Disposal Pits site consists of two pits that are located north of Tow Way Road on a hill overlooking Ensenada Honda. This site, SWMU 8, has been combined with SWMU 7 in other reports as IR Site 12.

Between 1971 and 1972, Tank 83 and 1080 were cleaned, and the Bunker C fuel sludge was emptied into two pits (NEESA, 1984). These pits are located within a 100-foot radius of the tanks. One pit near Tank 83, measured approximately 100 feet in circumference and 10 to 20 feet in depth. The second pit measured 50 feet in circumference and 10 to 20 feet in depth, and is located near Tank 1080 (NEESA, 1984). The 1984 IAS report indicates that an estimated 3,900 to 7,500 cubic yards of Bunker C fuel sludge were cleaned from the tanks and disposed of in these pits (NEESA, 1984).

The 1988, RFA VSI team report states that the pits were left open until the sludge solidified and then covered with several feet of soil (A.T. Kearney, Inc., 1988).

The 1988 ESE report does not address SWMU 8 specifically, but addresses Site 12 (SWMU 7 and SWMU 8 together). In 1988, ESE performed two rounds of verification sampling at this SWMU (SWMU 7 and SWMU 8). A total of two surface water, two sediment, and twelve groundwater samples were collected and analyzed. In addition, 97 soil borings were installed - 20 in Round 1 and 77 in Round 2. ESE reports that significant concentrations of oil and grease were detected in Round 1 sediment and surface water samples, but not in Round 2 sediment and surface water samples. The Round 2 surface water sample contained lead, but the concentration was below ambient water quality criteria. Round 1 groundwater samples indicated elevated levels of benzene, toluene, oil and grease, but the presence of lead and an

increased concentration of benzene. Numerous soil borings were noted as being contaminated with fuel (Technical Review Committee Meeting Minutes, 1989).

The pit locations could not be found in 1993.

2.2.3 SWMU 9 - Tank 212-217 Sludge Burial Pits

This SWMU consists of eight fuel storage tanks. Tanks 212 through 215 are located north of Forrestal Drive along Manila Bay Road. Tanks 216 and 217 are located on a hilltop about 4,000 feet southeast of tanks 212 through 215, north of Forrestal Drive (NEESA, 1984). This SWMU comprises IR Site 13.

The 1984 IAS report indicates that these tanks were constructed in 1948 for the storage of AVGAS (aviation gasoline), and that the tanks were cleaned about every five years until 1978. This does not include tanks 210 and 211, which were abandoned in 1950 and probably cleaned only once (NEESA, 1984). This report indicates that cleaning resulted in the removal of 20 to 30 drums (800 to 1,250 gallons) of leaded sludge per tank (NEESA, 1984). The IAS report estimates that between 30,000 and 50,000 gallons of leaded sludge were disposed of at these areas over a 40-year period (NEESA, 1984). This sludge was disposed of in a series of pits 8 feet x 8 feet x 8 feet (A.T. Kearney, Inc., 1988). These pits were located within 300 feet of the tank that was being cleaned. After the sludge settled in the pits, it was covered with three to four feet of soil (A.T. Kearney, Inc., 1988).

The 1988 RFA report indicates a start date of 1940 instead of 1948 as noted in the 1984 IAS report. The VSI team was unable to locate the buried pits during their inspection and the pits remained unlocateable in 1993.

In 1988, ESE performed two rounds of verification sampling at this SWMU. Six sediment samples were collected during each round of sampling (Technical Review Committee Meeting Minutes, 1989). According to ESE, oil and grease were detected in each round, but levels were not significant when shipping activities in the area were considered. Lead was also detected in both rounds, but not in significant levels (Technical Review Committee Meeting Minutes, 1989). Low levels of volatile organic compounds were detected in Round 2, but not in Round 1. Twelve surface water samples were also collected. Two of the six Round 1 samples indicated low levels of oil and grease. Oil and grease were not detected in any Round 2 surface water samples. Low levels of lead were detected in all Round 2 surface water samples. Eleven wells

were sampled during each round (Technical Review Committee Meeting Minutes, 1989). During Round 1, four wells contained significant levels of fuel-derived organic constituents. During Round 2, only two of the four wells continued to show significant fuel-derived organic constituents.

2.3 Operable Unit 3

Operable Unit 3 is composed of the following SWMUs:

- SWMU 11 - Old Power Plant/Building 38
- SWMU 45 - PCB Spill Area/Old Power Plant

Both of these SWMUs are in the Building 38 area. They comprise IR Site 16. A full RFI is required for each SWMU. Each SWMU is described in the subsection below.

2.3.1 SWMU 11 - Old Power Plant/Building 38

According to the 1984 RFA report, Building 38 was a 60-megawatt steam turbine facility that generated power from the early 1940s through 1949. The facility used Bunker C fuel, which was stored in two 50,000-gallon reinforced concrete tanks located directly northwest of the building. (NEESA, 1984). In the 1979s, Bunker C fuel was observed in manholes near Building 38 during heavy rainfalls. Bunker C fuel was also discharged to the Enlisted Beach through the old cooling water outlet for the Power Plant (NEESA, 1984).

The 1988 RFA report states that this SWMU is TSCA regulated. This was told to the VSI team by a facility representative. Located inside Building 38 is a cyclone fence which surrounds a curbed 8-inch concrete pad. PCB-contaminated items (e.g., old transformers and full 55-gallon drums) are temporarily stored on the concrete pad inside the cyclone fence (A.T. Kearney, Inc., 1988). A Defense Reutilization and Marketing Office (DRMO) contractor disposes these items. The VSI team observed drums that they believed to contain PCB-contaminated soil outside the cyclone fence. The VSI team also observed oil contaminated sorbent inside the fence on the concrete pad (NEESA, 1984). A facility representative told the VSI team that the oil spill inside the fence was from a non-PCB transformer (<50 ppm PCBs) and that laboratory results were pending regarding the contents of the drums located outside of the fence (NEESA, 1984).

In 1988, ESE produced a Remedial Action Alternative Analysis Report. ESE collected 38 soil samples from the site (9 in Round 1 and 29 in Round 2). These samples were analyzed for PCBs, oil and grease, volatile organic compounds (VOC), ethylene dibromide (EDB), xylenes, methyl ethyl ketone (MEK), and methyl isobutyl ketone (MIBK). In Round 2, an EP toxicity test for lead was completed. The analytical results indicated the presence of PCB and lead contamination at the site. Lead concentrations were less than the EP toxicity standard for lead. Other constituents detected, but not at levels of concern, were MEK as well as oil and grease (Technical Review Committee Meeting Minutes, 1989).

In 1992, Versar prepared a Remedial Investigation/Feasibility Study for this site. During their investigation, Versar collected numerous surface water, sediment, soil, wipe and chip samples. Based on their data and the data collected by ESE in 1988, Versar investigated the feasibility of the three following remedial alternatives:

- Soil excavation, transportation and off-site incineration
- Soil excavation, transportation and off-site land disposal
- Soil excavation and on-site incineration (Versar 1992a)

Of the three, Versar recommended Alternative 2 (soil excavation, transportation, and off-site land disposal).

The 1993 inspection indicated conditions within the building were similar to those seen in 1988.

2.3.2 SWMU 45 - PCB Spill Area/Old Power Plant

According to the 1984 IAS report, Building 38 was also used for the repair of electrical transformers from 1956 to 1964. During this time, used oil from the transformers was poured directly onto the ground in the vicinity of Building 38. An estimated 1,600 gallons of transformer fluid were disposed of in this area (NEESA, 1984).

The 1988 RFA VSI team indicates that the exact location of the spill area was difficult to ascertain at the time of the VSI. The VSI team also observed oil stains on a concrete pad near the northeast corner of Building 38. They did not observe a release to soils. Similar results were seen in 1993.

2.4 Operable Unit 4

Operable Unit 4 consists of one SWMU: SWMU 3 - Base Landfill.

The Base Landfill (IR Site 7) is located south of the Industrial Area Wastewater Plant (Building 1758) and operated from the early 1960s until 1978. The landfill covers 85 acres, and is separated into several different disposal areas (A.T. Kearney, Inc., 1988). Some of these "areas" are undetectable from the ground. Methods of disposal involved the excavation of a trench to the water table, filling the trench with waste, spreading and compacting the waste with a bulldozer, then covering the waste with soil. It is estimated that from 40 to 60 tons of waste per day were disposed of in the past (A.T. Kearney, Inc., 1988). Wastes that were disposed of at this SWMU include, residential wastes, scrap metal, cables, paint waste, solvents, PCBs, OTTO Fuel II, Argentine, Askarel, pesticides, lubricating oil, unlabeled 55-gallon drums, dead animals, inert ordnance, digested sludge, construction debris, asbestos, and possibly Super Tropical Bleach (STB), a decontaminating agent (NEESA, 1984).

In 1988, an RFA was performed at this SWMU. The VSI team observed one fiberglass drum with a polyethylene liner, and a decaying Volkswagen Beetle (A.T. Kearney, Inc., 1988).

In 1988, ESE produced a report evaluating two rounds of verification sampling and analysis. Eight groundwater monitoring wells were installed, and samples of groundwater were collected and analyzed from each well. In addition, three composite soil samples were collected from the drum ditch (ESE 1988). The ESE report indicates that only low levels of oil and grease were detected in the soil samples. The report also indicated that low levels of organic compounds, as well as metals concentrations exceeding drinking water criteria were detected in the groundwater samples collected during both rounds of sampling (ESE 1988).

The landfill is still operating and accepting wastes in accordance with EQB regulations.

2.5 Operable Unit 5

Operable Unit 5 is comprised of the following sites:

- SWMU 1 - Former Cremator Disposal Site (IR Site 5)
- SWMU 2 - Langley Drive Disposal Site (IR Site 6)

These SWMUs both require full RFI's, have similar disposal histories and are in close proximity of each other. Each SWMU is described in the subsections below.

2.5.1 SWMU 1 - Former Cremator Disposal Site

According to the 1984 IAS report the Army Cremator disposal area is located south of the intersection of the access road to the Ammo Pier and Langley Drive, west and southwest of the Navy Exchange and Bowling Alley, and near the Ensenada Honda Mangrove Swamp (NEESA, 1984).

This SWMU operated from the early 1940s until the early 1960s and was the main station landfill during this time. Waste material was disposed of by piling, burning and compacting (A.T. Kearney, Inc., 1988). An estimated 100,000 tons of waste including scrap metal, inert ordnance, batteries, tires, appliances, cars, cables, dry cleaning solvent cans, paint cans, gas cylinders, construction debris, dead animals, and residential waste was disposed of at this site (NEESA, 1984). No reliable information exists regarding the amounts of material present in the disposal area that could be hazardous. However, in 1984, the IAS team estimated that as much as 1,000 tons of hazardous material could be present in the area (NEESA, 1984).

In 1984, the IAS team spotted several large mounds of drums during an overflight. An on-ground visual inspection was attempted, but the vegetation was too dense, and the drums could not be located (NEESA, 1984).

In 1988, the RCRA Facility Assessment (RFA) VSI team observed an oily, silver-toned substance floating at the water's edge. Dead mangroves were observed several feet out from the water's edge and extending up and down the shoreline (A.T. Kearney, Inc., 1988). According to a facility representative, this was due to a spill of JP-5 (aviation kerosene) in November of 1986. An area measuring approximately 50 feet in diameter completely devoid of vegetation was found within the boundaries of this unit (A.T. Kearney, Inc., 1984).

In 1988, ESE produced a report that evaluated the data from two rounds of verification sampling. Five surface water, five sediment and five groundwater samples were collected in each round of sampling. The sediment samples contained isolated, low levels of pesticides, and elevated levels of antimony, selenium and methylene chloride (Technical Review Committee Meeting Minutes, 1989). The surface water samples revealed several metals that exceeded ambient water quality criteria. Groundwater samples indicated thallium, copper, arsenic,

chromium (total and hexavalent) and selenium in levels that exceeded primary drinking water standards. Low levels of organic compounds were also detected in some of the groundwater samples (Technical Review Committee Meeting Minutes, 1989).

The 1993 findings indicated the area to be densely vegetated and mostly inaccessible.

2.5.2 SWMU 2 - Langley Drive Disposal Site

The Langley Disposal Site, which is located along Langley Drive approximately 2,000 feet north of the Navy Exchange Complex and 300 feet east of the drive towards Ensenada Honda, operated as a landfill from approximately 1939 to 1959 (NEESA, 1984). The Navy documents this unit as having been used for the disposal of both hazardous and nonhazardous wastes (A.T. Kearney, Inc., 1988).

In 1984, the IAS team performed a site inspection. During the inspection, the IAS team observed partially buried metal and concrete objects, old fuel lines, flexible metal hoses, small containers containing pellets, steel cables, hardened tar, rubble, and ten to fifteen 55-gallon drums that were corroded. The drum contents, usually consisting of a whitish solid with a green outer crust, were exposed (NEESA, 1984). The IAS team estimated the volume of disposed waste to be approximately 1,700 cubic yards, of which approximately 20,000 pounds could be hazardous material.

In 1988, a RFA was performed at this site. The VSI team observed a dump site covering an area of approximately 40 feet x 150 feet. Within the perimeter were lengths of thick cable, broken concrete blocks, ringed metal hoses, and six severely corroded drums. At least one of the drums was filled with a white, damp chalky substance (A.T. Kearney, Inc., 1988).

In 1988, ESE produced a report that evaluated data from two rounds of sampling. Thirty-two soil samples, six sediment, six surface water and one groundwater sample were collected during the two rounds of sampling. Elevated levels of lead were found in some soil samples (Technical Review Committee Meeting Minutes, 1989). During Round 2, two soil samples were analyzed for EP Toxicity for lead only. The results of these analyses indicated that the soil samples cannot be classified as hazardous waste. Elevated levels of total chromium, copper and selenium were detected in surface water samples (Technical Review Committee Meeting Minutes, 1989).

Dense vegetation prevented a detailed inspection during the 1993 reinspection.

2.6 Operable Unit 6

Operable Unit 6 is comprised of Area of Concern B - Building 25.

This AOC is part of IR Site 10. The 1984 IAS report noted the following:

- Building 25 was used from 1951 until the structure collapsed in 1979 by the Public Works Supply Department for temporary storage of materials to be turned over to DPDO. The entire area around the building was used for open storage of drummed material from at least 1957, according to aerial photographs.
- The entire area in and around the collapsed building is overgrown with vegetation, although historical aerial photographs show the area to be relatively free of vegetation other than ground cover through 1977.
- Materials found in and around Building 25 include 20 to 25 apparently empty to partially filled 55-gallon drums; 10 to 15 5-gallon pails; office furniture; mechanical devices; construction rubble; industrial gas cylinders; asbestos sheeting; fiberglass buoys; and transformers.
- Of particular interest are the 5-gallon pails, the drums, and a large transformer found at the collapsed building. The compounds has a green-colored crust about 1/2-inch thick, encasing a white material with the consistency of semi-dry plaster. A large transformer is lying on its side at the east corner of the building. No evidence of oil leakage was apparent (NEESA, 1984).

The 1988 RFA VSI team observed that Building 25 had collapsed. They also noted the following:

- It appeared that the majority of material stored there consisted of old clothing, empty wooden boxes and small empty shells. No sign of release was noted during the VSI; however, it is possible that some amount of material was completely covered by vines and could not be observed during the VSI (A.T. Kearney, Inc., 1988).

In 1988, ESE performed two rounds of verification sampling for IR Site 10 (SWMU 31 and 32, and AOC B). Only groundwater samples were collected from eight wells. The results of the analyses indicated the presence of low levels of organic compounds and the presence of some metals at levels that exceeded primary drinking water standards and ambient water quality criteria.

The former building pad is now used to store bulldozers and cranes. A number of drums containing raw material are also stored on the pad. Minor staining was evident both on and adjacent to the pad during the 1993 reinspection.

2.7 Operable Unit 7

Operable Unit 7 is comprised of Area of Concern D - Base Outfalls. Although, ongoing releases from permitted outfalls to the surface water are being addressed under an EPA/Navy Federal Facilities Compliance Agreement, administered under the NPDES program, there have been no investigations of past releases of hazardous constituents from the base's outfalls, which may have impacted surface water sediments.

3.0 SCOPE OF WORK

3.1 RFI Activities

The planned RFI activities for each operable unit and associated SWMUs are presented in Table 3-1. Full and first-phase RFIs have been mandated in the draft corrective action permit as described below:

- Full RFI - Full RFIs will be conducted at SWMUs where releases were established during previous investigations. The purpose of the full RFI is to determine the nature, rate, direction, and extent of migration of hazardous waste or constituents.

Full RFIs will be conducted at Operable Units 2, 3, 4, 5 and 6.

- First-Phase RFI - First-phase RFIs differ from full RFIs in the extent and degree of investigations required. The purpose of the first-phase RFI is to confirm, through sampling, any releases from the SWMUs.

First-phase RFIs will be conducted for the soil matrix at Operable Unit No. 1 and for the surface water/sediment matrix at Operable Unit 7.

RFI activities at two SWMUs are contingent on results of other environmental investigation activities currently underway at these SWMUs. These include:

- SWMU 10 - Substation 2/Building 90 (IR Site 15)

Pending results from interim remedial actions under the IR Program, a full RFI may be required.

- SWMU 19 - Building 121, Discarded Pesticide Storage Area (IR Site 21)

Pending results from closure under an approved RCRA closure plan, a full RFI may be required.

TABLE 3-1

SWMUs/AOCs MEDIA SUBJECT TO INVESTIGATION

Operable Unit	SWMU/AOC	GW	Soil	SW/S	Air	RFI Type	IR Status (1)
1	No. 6 Building 145	No	Yes	No	No	FP	2
	No. 12 Fire Training Pit Oil/Water Separator	No	Yes	No	No	FP	2
	No. 13 Old Pest Control Shop/Building 258	Contingent	Yes	Yes	No	FP	2
	No. 14 Fire Training Pit Area	Contingent	Yes	No	No	FP	2
	No. 23 Oil Spill Separator Tanks	Contingent	Yes	No	No	FP	
	No. 24 Oil Spill Oil/Water Separator and Adjoining Pad	No	Yes	No	No	FP	
	No. 25 DRMO Storage Yard	No	Yes	No	No	FP	
	No. 26 Building 544 Area	No	Yes	No	No	FP	
	No. 29 Industrial Area Wastewater Plant	No	Yes	No	No	FP	X
	No. 30 Former Incinerator Area	No	Yes	No	No	FP	
	No. 31 Waste Oil Collection Area/Building 31 and 2022	Yes	Yes	No	No	FP	1
	No. 32 PWD Storage Yard/Battery Collection Area/Building 31	Yes	Yes	No	No	FP	1
	No. 33 AIMD Storage Pad/Building 379	No	Yes	No	No	FP	X
	No. 37 Waste Oil Storage Area/Building 200	No	Yes	No	No	FP	
	No. 39 Building 3158/Former Battery Drain Area	No	Yes	No	No	FP	X
	No. 41 Seabee Pesticide Rinse Rack	No	Yes	Yes	No	FP	
	No. 46 Pole Storage Yard Covered Pad	No	Yes	No	No	FP	
	No. 50 Storage Area behind Building 3166	No	Yes	No	No	FP	X
No. 51 New AIMD Storage Pad/Building 379	No	Yes	No	No	FP		
No. 52 Drum Storage Pad, near Building 3158	No	Yes	No	No	FP	X	
AOC No. C/Transformer Storage Pad	No	Yes	No	No	FP		

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Should be in AOC B

To be removed

To be removed

To be removed

To be removed

TABLE 3-1 (Continued)

SWMUs/AOCs MEDIA SUBJECT TO INVESTIGATION

Operable Unit	SWMU/AOC	GW	Soil	SW/S	Air	RFI Type	IR Status (1)
2	No. 7 Tow Way Road Fuel Farm	Yes	Yes	Contingent	No	Full	2,3
	No. 8 Tow Way Road Sludge Burial Pits	Yes	Yes	Contingent	No	Full	2,3
	No. 9 Tank 212-217 Sludge Burial Pits	Yes	Yes	Contingent	No	Full	2,3(?)
3	No. 11 Old Power Plant/ Building 38	Yes	Yes	Yes	No	Full	1
	No. 45 PCB Spill Area/ Old Power Plant	Yes	Yes	Yes	No	Full	1
4	No. 3 Base Landfill	Yes	Yes	Yes	No	Full	1
5	No. 1 Former Cremator Disposal Site	Yes	Yes	Yes	No	Full	1
	No. 2 Langley Drive Disposal Site	Yes	Yes	Yes	No	Full	1
6	AOC No. B/Building 25	Yes	Yes	No	No	Full	1
7	AOC No. D/Base Outfalls	No	No	Yes	No	FP	

Notes: GW = Groundwater

SW/S = Surface Water/Sediment

FP = First Phase

(1) Status: 1 = Ongoing IR investigations at this SWMU.

2 = Part of IR site where no further investigations planned.

3 = Site being investigated under Navy's UST program; however, the results of the investigation have not yet been reported to EPA.

3.2 Investigation Media

Soil, groundwater, and surface water/sediment investigations will be conducted at the various SWMUs. Table 3-1 lists the media subject to investigation at each SWMU. These investigations are described in the subsections below.

3.2.1 Soil Investigations

Soil investigations will be conducted in an attempt to determine the source and extent of contaminants in the soil at the SWMUs. The potential for migration of contaminants in the soil to other media (groundwater, surface water/sediment) will be evaluated. This will involve collection of surface and possibly subsurface soil samples. Analytical parameters will be dependent on the operational history of each SWMU and other available information.

Soil investigations will be conducted at all of the SWMUs listed on Table 3-1.

3.2.2 Groundwater Investigations

Groundwater investigations will be conducted in an attempt to determine the source and extent of contaminants in the groundwater at the SWMUs. This will involve collection of groundwater samples from existing or newly-installed monitoring wells. Analytical parameters will be dependent on the operational history of each SWMU and other available information.

Groundwater investigations will be conducted at the SWMUs that require a full RFI. This includes the SWMUs at Operable Units 2, 3, 4, 5, and 6 (Table 3-1).

3.2.3 Surface Water/Sediment Investigations

Surface water/sediment investigations will be conducted in an attempt to determine the source and extent of contaminants in the surface water/sediment at the SWMUs. This will involve collection of surface water and sediment samples. Analytical parameters will be dependent on the operational history of each SWMU and other available information.

Surface water/sediment investigations will be conducted at the SWMUs that require a full RFI (Operable Units 2, 3, 4, 5, and 6). A surface water/sediment investigation will be conducted as

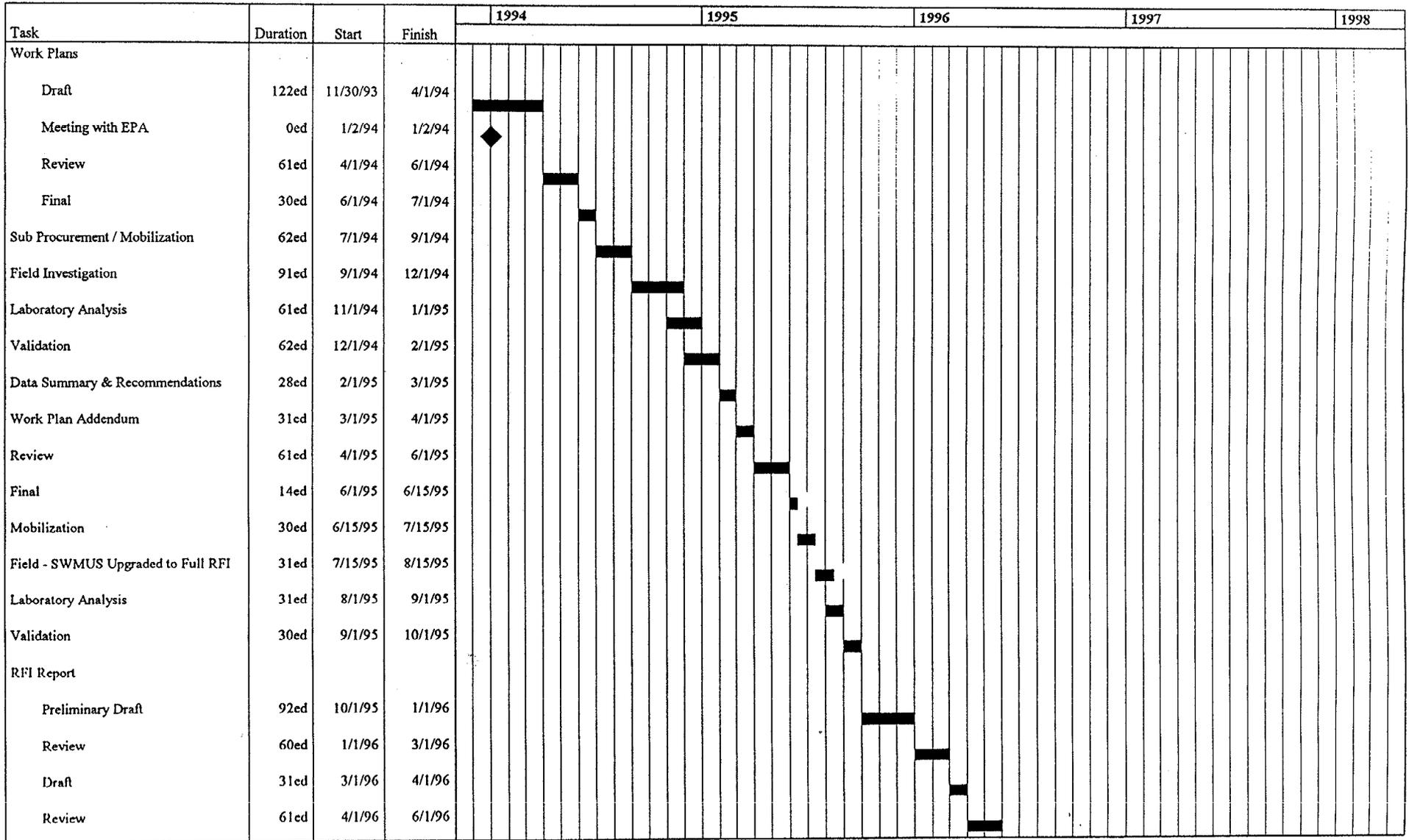
part of a first-phase RFI for Operable Unit 7 (Area of Concern D - Base Outfalls) (see Table 3-1).

4.0 SWMU MANAGEMENT SCHEDULES

The purpose of this section is to present project schedules for each of the seven Operable Units for Fiscal Years 1994 through 1999. These schedules will be adjusted annually as part of the Site Management Plan revision.

The project schedules are depicted on Figures 4-1 through 4-4.

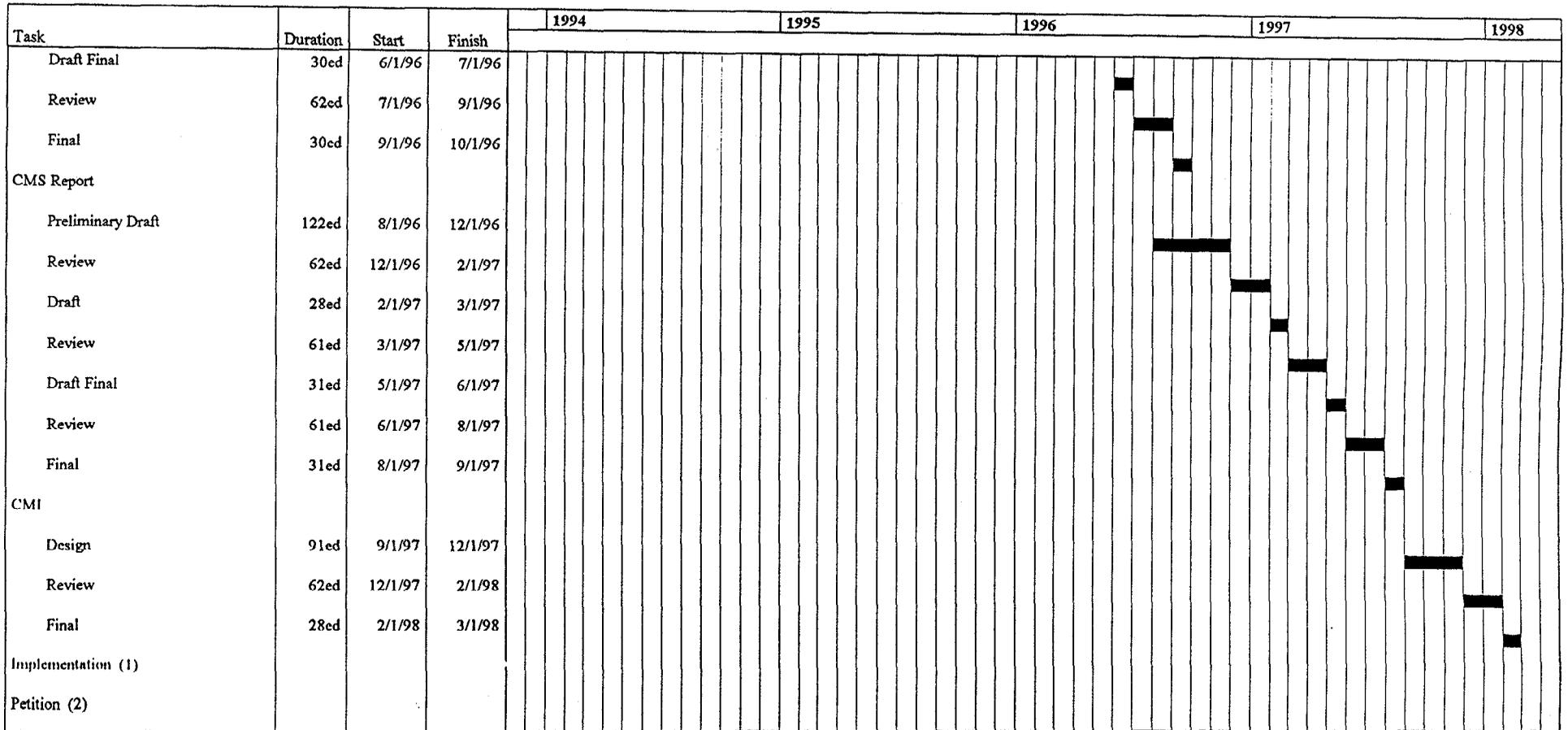
Figure 4 - 1
 Site Management Schedule
 Operable Units 1 and 2 - NSRR



4-2

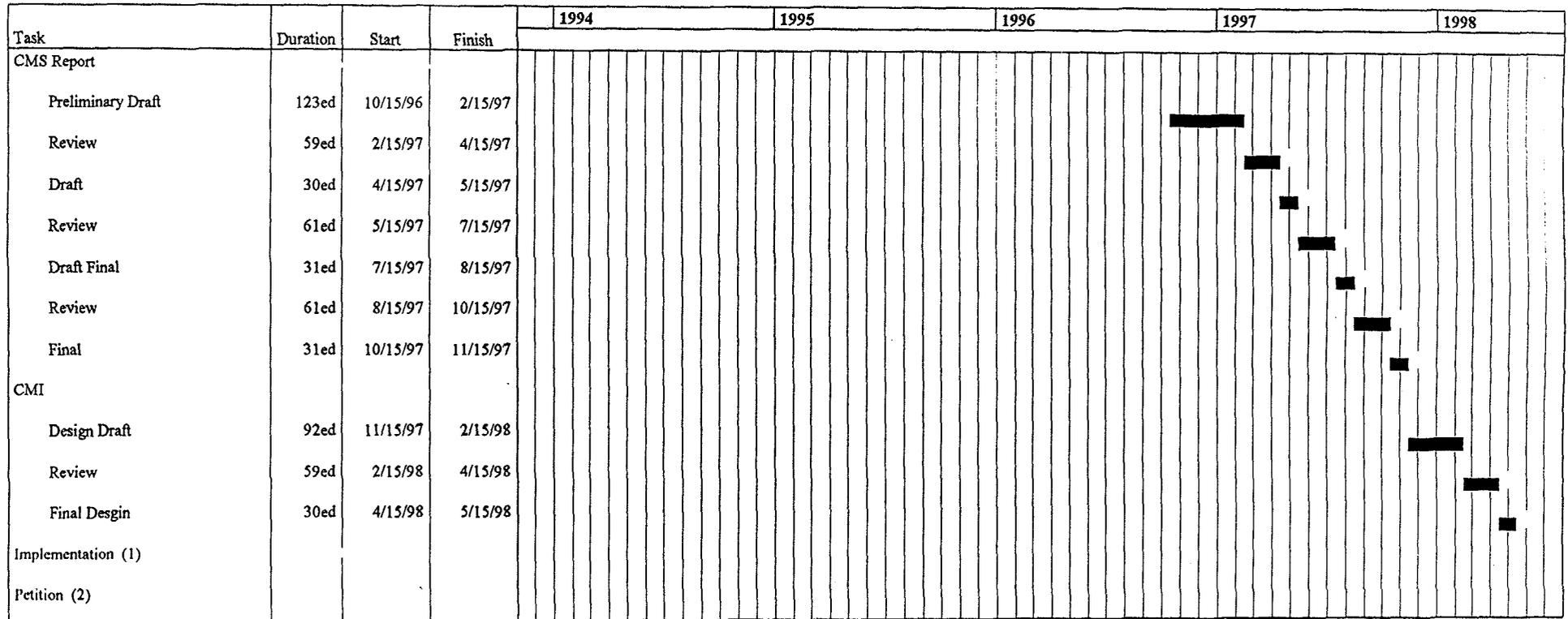
(1) Determined by Scope of Remedial Measures (2) To be started at end of Remediation

Figure 4 - 1
 Site Management Schedule
 Operable Units 1 and 2 - NSRR



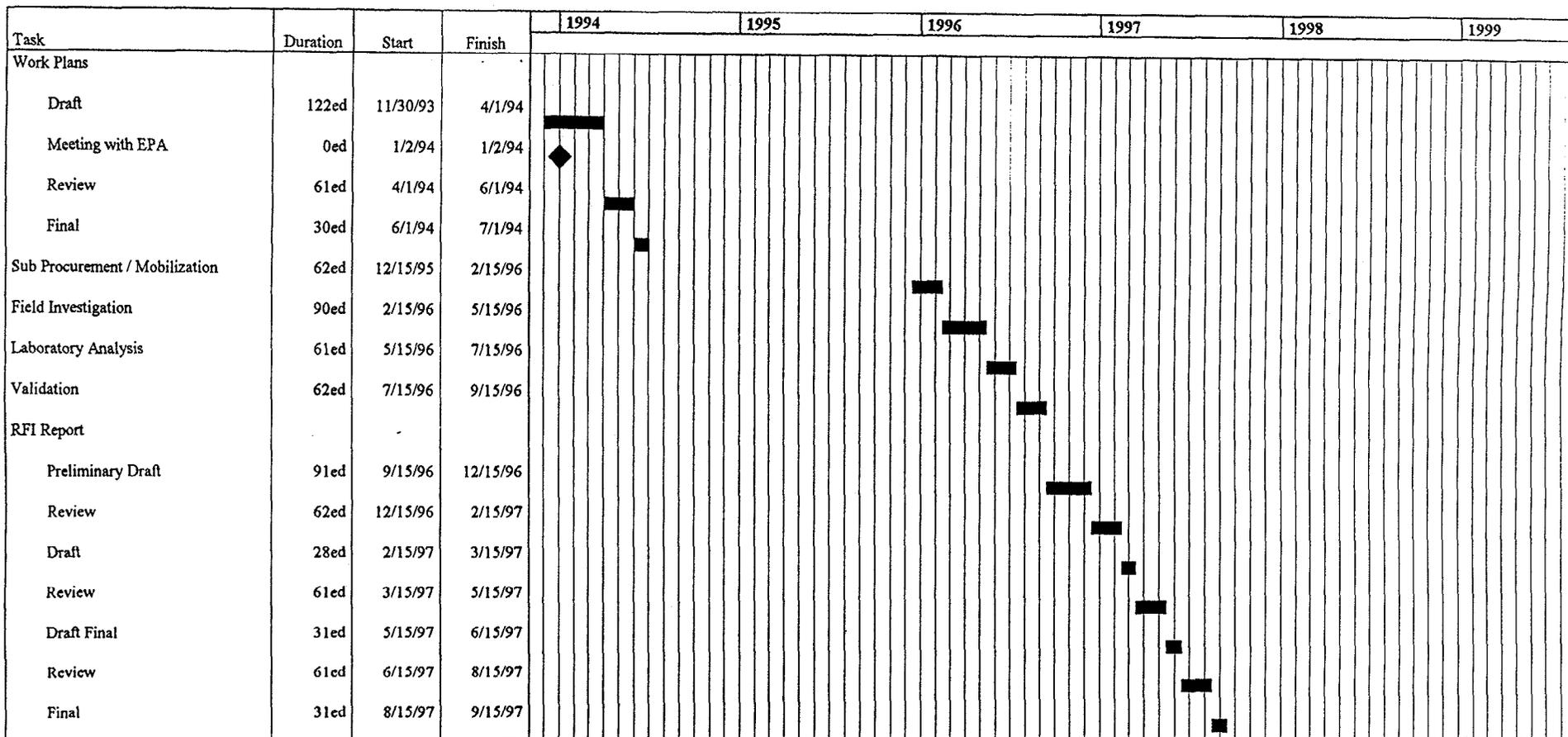
(1) Determined by Scope of Remedial Measures (2) To be started at end of Remediation

Figure 4 - 2
Site Management Schedule
Operable Units 3 and 5 - NSRR



(1) Determined by Scope of Remedial Measures (2) To be started at end of Remediation

Figure 4 - 3
 Site Management Schedule
 Operable Units 4 and 6 - NSRR



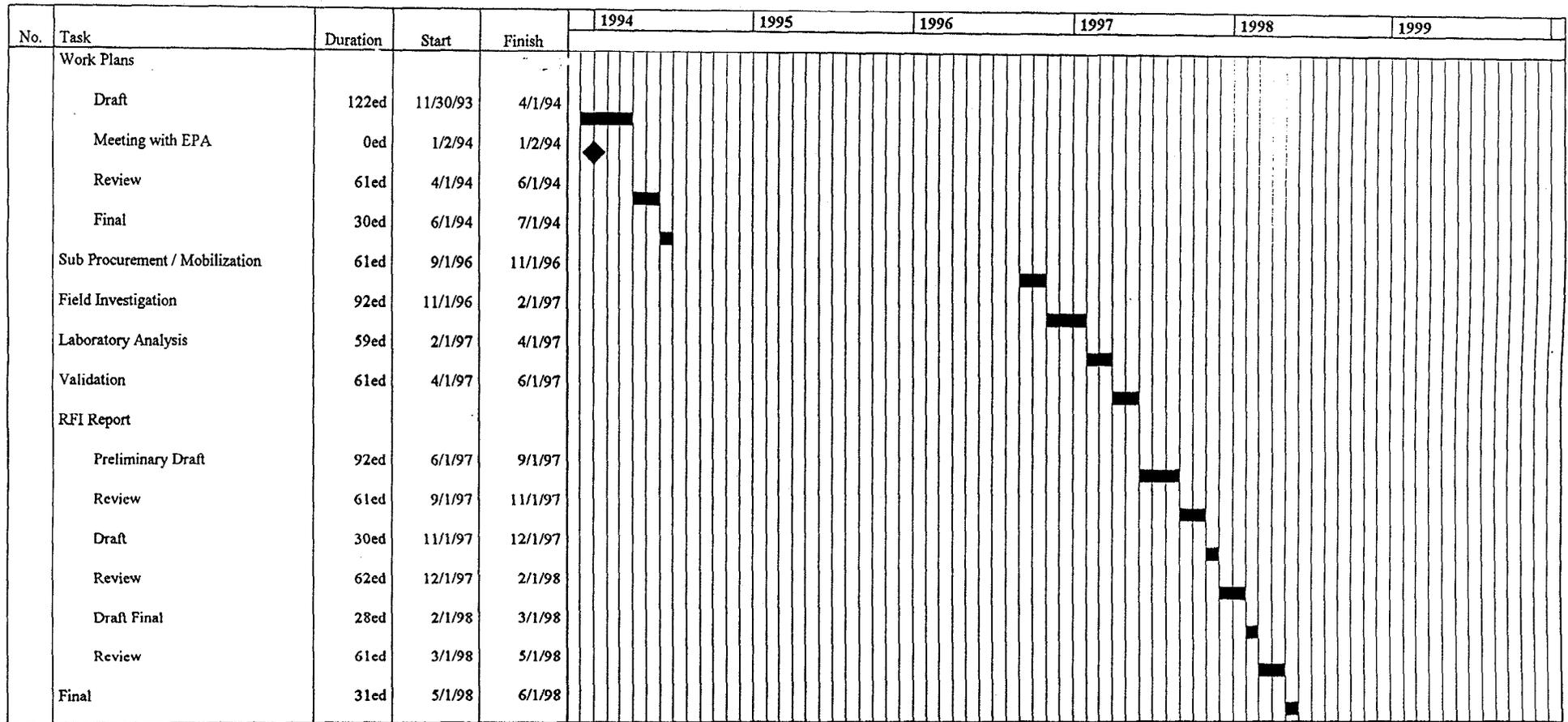
4-4

Figure 4 - 3
 Site Management Schedule
 Operable Units 4 and 6 - NSRR

Task	Duration	Start	Finish	1994												1995												1996												1997												1998												1999																																																																																			
CMS Report																																																																																																																																																			
Preliminary Draft	122ed	9/15/97	1/15/98																																																																																																																																																
Review	59ed	1/15/98	3/15/98																																																																																																																																																
Draft	31ed	3/15/98	4/15/98																																																																																																																																																
Review	61ed	4/15/98	6/15/98																																																																																																																																																
Draft Final	30ed	6/15/98	7/15/98																																																																																																																																																
Review	62ed	7/15/98	9/15/98																																																																																																																																																
Final	30ed	9/15/98	10/15/98																																																																																																																																																
CMI																																																																																																																																																			
Draft Design	92ed	10/15/98	1/15/99																																																																																																																																																
Review	59ed	1/15/99	3/15/99																																																																																																																																																
Final Design	31ed	3/15/99	4/15/99																																																																																																																																																
Implementation (1)																																																																																																																																																			
Petition (2)																																																																																																																																																			

(1) Determined by Scope of Remedial Measures (2) To be started at end of Remediation

Figure 4 - 4
 Site Management Schedule
 Operable Units 7 - NSRR



4-5

(1) Determined by Scope of Remedial Measures (2) To be started at end of Remediation

Figure 4 - 4
 Site Management Schedule
 Operable Units 7 - NSRR

No.	Task	Duration	Start	Finish	1994												1995												1996												1997												1998												1999																																																																																			
					1994												1995												1996												1997												1998												1999																																																																																			
	CMS Report																																																																																																																																																			
	Preliminary Draft	122ed	6/1/98	10/1/98																																																																																																																																																
	Review	61ed	10/1/98	12/1/98																																																																																																																																																
	Draft	31ed	12/1/98	1/1/99																																																																																																																																																
	Review	59ed	1/1/99	3/1/99																																																																																																																																																
	Draft Final	31ed	3/1/99	4/1/99																																																																																																																																																
	Review	61ed	4/1/99	6/1/99																																																																																																																																																
	Final	30ed	6/1/99	7/1/99																																																																																																																																																
	CMI																																																																																																																																																			
	Draft Design	92ed	7/1/99	10/1/99																																																																																																																																																
	Review	61ed	10/1/99	12/1/99																																																																																																																																																
	Final	31ed	12/1/99	1/1/00																																																																																																																																																
	Implementation (1)																																																																																																																																																			
	Petition (2)																																																																																																																																																			

(1) Determined by Scope of Remedial Measures (2) To be started at end of Remediation