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Final Decision Document

**SWMUs 11, 16, 16GC, 21, 22,
and 26**

Prepared for
NAS Oceana

Virginia Beach, Virginia

December 2001

CH2MHILL
Herndon, Virginia

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SECTION 1

The Declaration

1.1 Site Name and Location

Solid Waste Management Units (SWMUs) 11, 16, 16GC, 21, 22, and 26
Naval Air Station (NAS) Oceana
Virginia Beach, Virginia

1.2 Statement of Basis and Purpose

This decision document (DD) presents the no Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) remedial action decision for SWMUs 11, 16, 16GC, 21, 22, and 26, located at NAS Oceana, Virginia Beach, Virginia. This determination was made in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record file for this site.

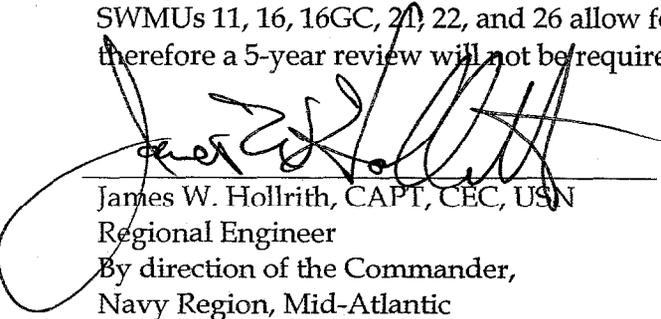
The Virginia Department of Environmental Quality (VDEQ) concurs with the selected remedy.

1.3 Description of the Selected Remedy

Previous investigations of SWMUs 11, 16, 16GC, 21, 22, and 26 have determined that these sites pose no unacceptable human health or ecological risk. Therefore, no CERCLA remedial action is necessary to protect public health or the environment.

1.4 Statutory Determination

The no CERCLA remedial action decision for NAS Oceana SWMUs 11, 16, 16GC, 21, 22, and 26 is protective of human health and the environment. The levels of contamination at SWMUs 11, 16, 16GC, 21, 22, and 26 allow for unlimited site use and unrestricted exposure; therefore a 5-year review will not be required.


James W. Hollrith, CAPT, CEC, USN
Regional Engineer
By direction of the Commander,
Navy Region, Mid-Atlantic

13 DEC 2001
Date

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Decision Summary

This DD is issued to describe the Department of the Navy (Navy) and the U.S. Environmental Protection Agency's (EPA's) selected remedial action for SWMUs 11, 16, 16GC, 21, 22, and 26 at NAS Oceana, Virginia Beach, Virginia (Figure 2-1). The VDEQ concurs with the selected remedy. The Navy is the lead agency and provides funding for site cleanups. SWMUs 11, 16, 16GC, 21, 22, and 26 (Figures 2-2 through 2-8) are among several Installation Restoration Program (IRP) sites located at the NAS Oceana facility.

2.1 Site Name, Location, and Description

The site name is NAS Oceana, located in Virginia Beach, Virginia. NAS Oceana was established in 1940 as a small, auxiliary airfield and has grown more than 16 times its original size to a 6,000-acre master jet base supporting a community of more than 9,100 Navy personnel and 11,000 dependents. The primary mission of NAS Oceana is to provide the personnel, operations, maintenance, and training facilities to ensure the deployment readiness of fighter and attack squadrons on aircraft carriers of the U.S. Atlantic Fleet.

2.2 Site History and Enforcement Activities

2.2.1 History of Site Activities

SWMU 11—Fire-Fighting Training Area

SWMU 11 consists of two fire-fighting training rings and their immediate surroundings. The site is on the west side of NAS Oceana at the intersection of two abandoned runways. From the early 1960s until the mid-1970s, two fire-fighting practice sessions were conducted each weekend as part of training exercises. Waste oil, fuel, and hydraulic fluid were poured into the center of the abandoned runway, ignited, and extinguished. In the mid-1970s, a fire pit with an earthen outer berm was built. The waste fuels and water would occasionally flow over the earthen berm onto surrounding soils.

Ignitable materials used in the training fires, in addition to the wastes listed above, included paint, paint thinners, and solvents. An additional fire training ring was constructed adjacent to the existing one in the early 1980s. An oil/water separator was installed and connected to the newer fire training area to safeguard against loss of petroleum-oil-lubricant (POL) and groundwater contamination. In the early 1990s, the Navy constructed a jet mock-up training device that uses propane as fuel for fire-fighting exercises. This new training area, located approximately 500 feet north of SWMU 11, is constructed on a concrete pad and includes run-off collection devices.

SWMU 16—Pesticide Storage Area

SWMU 16 consists of a pesticide storage area adjacent to the pesticide shop at Building 821 in the Public Works Compound. Rinse water from the pesticide mixing tank was discharged

directly onto the ground near Building 821 between 1968 and 1982. The pesticide shop was in operation for 15 years.

SWMU 16GC—Pesticide Storage Area, Golf Course Maintenance Shop

SWMU 16GC consists of the pesticide storage area at the Golf Course Maintenance Shop. The pesticide storage area at the NAS Oceana Golf Course has existed since 1956, and pesticides were stored in the Golf Course Barn—Building 798.

Materials stored in the barn included fungicides, herbicides, and an insecticide. Since 1982, pesticides drained from the spray tank into 55-gallon drums have been removed by Public Works as part of the hazardous waste pickup program. Before 1982, residual pesticides were rinsed over a concrete rinsing pad in the shack outside Building 798. This rinse water flowed into a shallow drainage ditch adjacent to Building 798.

SWMU 21—Transformer Storage Yard, Building 530

SWMU 21 is located in the southwestern corner of the Public Works Transportation Yard, approximately 400 feet southeast of Building 830. Transformers were stored in two gravel areas between the sand loaders and the yard's chain-link fence. The sand loaders are on the edge of a large asphalt parking lot. In the past, old electrical transformers, which were known to contain polychlorinated biphenyls (PCBs), were stored on pallets over bare ground at this site until they could be disposed. The Public Works Transportation Yard has been in use since the early 1950s; however, it is unclear how long this area has been used for transformer storage. Transformers have been stored in the yard since as early as 1982, when a transformer leaked oil, and the Navy hired a contractor to clean up the spill. Two transformers without release controls were seen leaking oil onto the ground during the visual site inspection of the RCRA Facility Assessment (RFA).

Navy personnel inspected the transformers stored at SWMU 21 on a regular basis, and a contractor was retained by the Navy to respond to any identified release. In recent years, the NAS Oceana PCB program was subjected to a "multi-media" EPA inspection in the summer of 1998, which included a review of inspection records. No PCB program discrepancies, or findings, were noted by the EPA inspectors.

SWMU 22—Construction Debris Landfill

SWMU 22 is approximately 600 to 1,000 feet west of Oceana Boulevard and 1,500 feet north of the VACAPES complex. The landfill is an approximately 0.5-acre unlined facility. The age of the landfill is unknown, but it was first discovered in 1986. The former permit status of this landfill is not known. Although the Navy designated and permitted this landfill for construction debris, controls on the landfill's waste stream did not prevent the disposal of other types of waste. Essentially only surface dumping occurred at this SWMU and was confined to inert objects such as major appliances, furniture, and aircraft components. These objects have been removed and the area replanted as part of ecological restoration activities being conducted on the base. There have been no documented releases from this site.

SWMU 26—Fire-Fighting Training Area, Building 220

SWMU 26 consisted of a partially buried drum or small tank with the top removed that measured 3-feet wide by 4-feet high and was inset approximately 3 feet below grade. The tank formed a burn pit that was used for fire extinguisher training. The tank was located southeast of Building 220, the base's fire station. Fuel-soaked objects and POL were placed in the pit and ignited. Burn residue and water were periodically pumped out of the tank to the adjacent mowed depression or swale. This swale is a low, graded, mowed area between two parking lots where storm water collects and percolates into the groundwater, but does not connect to a drainage system or a surface water body. Soil staining extended to the adjacent swale. The burn pit had no release controls in 1988. The tank has been removed and the area has been returned to grade during or before 1990.

2.2.2 Previous Investigations

Multiple studies within the RCRA corrective action process and studies under the IRP prior to the RCRA corrective action have been conducted at NAS Oceana. Several SWMU-specific studies are currently proposed. The studies for SWMUs 11, 16, 16GC, 21, 22, and 26 are summarized below.

- *Initial Assessment Study (IAS), NAS Oceana, Virginia Beach, Virginia, Final Document, 1984.*

The IAS was the first stage of the IRP at NAS Oceana. The IAS recommended field investigations for six SWMUs to confirm whether hazardous constituents had been released to the environment.

- *Interim RCRA Facility Investigation (RFI), NAS Oceana, Virginia Beach, Virginia, Final Document, 1990.*

Prior to the initiation of a full-scale RFI, CH2M HILL conducted an Interim RFI. The RFI continued the investigation of six SWMUs that were originally studied under the Navy's IRP, and initiated work at four other SWMUs. The field activities were oriented towards guiding a decision on whether a given SWMU should be included for study under the RFI. The Interim RFI recommended additional work at 6 of 10 SWMUs studied; no further investigation was recommended for the remaining 4 SWMUs.

- *RCRA Facility Investigation—Phase I, NAS Oceana, Virginia Beach, Virginia, Final Report, 1993.*

Seventeen SWMUs, including SWMUs 11, 16, 16GC, 21, 22, and 26 were investigated during the Phase I RFI. As a result of this investigation, SWMUs were reclassified into four categories: (1) SWMUs that could advance to a Corrective Measures Study (CMS); (2) SWMUs that required additional characterization under a second phase of the RFI; (3) SWMUs where contamination, specifically of soil, could be remediated immediately on the basis of the existing data; and (4) SWMUs requiring no additional study or remediation. The SWMUs were divided into separate study tracks based on these recommendations.

- *Corrective Measure Studies for Petroleum Contaminated SWMUs (POL CMS), NAS Oceana, Virginia Beach, Virginia, Final Report, 1995 and Excavation, Transportation, and Disposal of Petroleum Contaminated Soils (ETD PCS), NAS Oceana, Virginia Beach, Virginia, Final Document, 1995.*

A CMS was conducted for five SWMUs (SWMUs 11, 18, 19, 20, and 24) that had soil contaminated with POL wastes. The POL CMS and ETD PCS describe the sampling conducted to delineate specific areas of contamination and the interim cleanup action to address these areas of contaminated soils.

- *Phase III RFI, NAS Oceana, Virginia Beach, Virginia, Final Document, 1999.*

Data gaps identified in the RFI Phase I, the POL CMS, and the ETD PCS were used to scope the field work for the Phase III RFI. The initial Phase III RFI field investigation focused on nine SWMUs (1, 2B, 2C, 2D, 18, 21, 24, 25, and 26) and was completed in December 1997. A draft-final report was submitted to the EPA for review and comment in July 1998. Due to regulatory comments on the draft-final report, additional fieldwork was required.

- *Screening and Baseline Ecological Risk Assessment (ERA), Steps 1, 2, and 3, SWMUs 2B, 11, 16, 16GC, 21, 22, and 26, Naval Air Station Oceana, Virginia, Beach, Virginia, Final Document, August 2001.*

The Navy prepared a Screening and Baseline ERA for seven SWMUs, including 11, 16, 16GC, 21, 22, and 26. The ERA proposed no further action (NFA) for ecological concerns at these seven SWMUs.

The Navy's response to comments on the Phase I RFI, the POL CMS, the ETD PCS report, the findings of the Phase III RFI, and the ERA support the determination of NFA at 11 of the SWMUs, including SWMUs 11, 16, 16GC, 21, 22, and 26. The NFA determination was based primarily upon human health risk considerations. It was agreed that the EPA's Biological Technical Assistance Group (BTAG) would forgo a review of previous RCRA reports and the Phase III RFI as the Navy further evaluated ecological concerns at all NAS Oceana SWMUs within the ERA process required under CERCLA.

Previous investigation reports are included in the Administrative Record for this site.

2.2.3 Enforcement Actions

The investigation/remediation is a joint effort between the Navy, EPA, VDEQ, and the Activity. Previous SWMU investigations have been conducted under provisions of the RCRA Corrective Action program. As of July 1998, cleanup activities are being conducted under the provisions of CERCLA, within the framework of new administrative procedures. Under the new administrative procedures, the Navy and EPA will reach concurrence on the classification of each SWMU in lieu of scoring each SWMU for the National Priorities List (NPL).

A total of 60 SWMUs were recommended for study in the draft RCRA Consent Order issued by the EPA. After reviewing the results of the Interim RFI, the Navy and EPA determined that only 19 SWMUs required investigation under the RCRA Consent Order; the remainder

of the SWMUs are regulated under other federal and/or state programs. Following the issuance of the RCRA Consent Order, the Navy combined four of the identified SWMUs into two due to relative proximity and similar site operations; therefore, the final count of sites investigated by the Navy in the previous investigation is 17 SWMUs.

2.3 Community Participation

In accordance with Sections 113 and 117 of CERCLA, the Navy provided a public comment period from August 13, 2001 through September 12, 2001 for the proposed remedial action.

The Proposed Remedial Action Plan (PRAP) was available to the public in the Administrative Record and in an information repository maintained at the Virginia Beach Public Library, 4100 Virginia Beach Boulevard, Virginia Beach, Virginia. Public notice was provided in *The Virginia Pilot* on August 13, 2001 and a Public Meeting was held in the NAS Oceana Officers Club, NAS Oceana, Virginia Beach, Virginia on August 16, 2001.

The Navy and NAS Oceana have had a comprehensive public involvement program for several years. Starting in January 1989, a Technical Review Committee (TRC) met on average twice a year to discuss issues related to investigative activities at NAS Oceana. The TRC was composed of mostly governmental personnel; however, a few private citizens attended these meetings.

In November 1994, the Navy converted the TRC into a Restoration Advisory Board (RAB). The RAB is co-chaired by a community member and has held meetings approximately every 4 to 6 months. Previous investigations were discussed at the RAB meetings.

Community participation activities for the final selected remedy include:

- The documents concerning the investigation and analysis at SWMUs 11, 16, 16GC, 21, 22, and 26 were placed in the information repository at the Virginia Beach Public Library, 4100 Virginia Beach Boulevard, Virginia Beach, Virginia.
- A newspaper announcement on the availability of the documents and the public comment period/meeting date was placed in *The Virginia Pilot* on August 13, 2001.
- The Navy established a 30-day public comment period starting August 13, 2001 and ending September 12, 2001 for review of the PRAP.
- A Public Meeting was held August 16, 2001 to answer any questions concerning the PRAP. The transcript of this Public Meeting is included in the Responsiveness Summary, which is part of this Decision Document.

2.4 Scope and Role of Response Actions

Under the new administrative procedure, conducting all cleanup activities following the procedural and substantive requirements of CERCLA while the RCRA Consent Order remains in effect, the Navy issued a Site Management Plan (SMP) to present an overall site cleanup plan for NAS Oceana. The SMP divided the 17 NAS Oceana SWMUs into four categories based upon the additional work required for each SWMU.

- Category 1—SWMUs that Require no Further Study, Remediation, or Risk Assessment (2D, 18, 19, 20, 23)
- Category 2—SWMUs that Require no Further Study or Remediation, but Require Further Consideration for Ecological Risk (11, 16/16GC, 21, 22, 25, 26); all but SWMU 25 are the subject of this DD
- Category 3—SWMUs that Currently Require Additional Study or Remediation but do not Require Further Consideration for Ecological Risk (2C, 2E, 24)
- Category 4—SWMUs that Currently Require Additional Corrective Action under CERCLA and Require Further Consideration for Ecological Risk (1, 2B, 15)

In addition to the investigations that are summarized in Section 2.2.2, the Navy completed a Human Health Risk Assessment (HHRA) for SWMUs 1, 15, and 24 and an ERA for SWMUs 1 and 15 in January and June 2001, respectively. Further, the Navy is nearing completion of the HHRA for SWMUs 2B, 2C, and 2E. With the completion of this HHRA, a Feasibility Study (FS) is planned for these three SWMUs. A PRAP and DD will be prepared for each NAS Oceana SWMU to document the selected remedial alternatives. This DD for SWMUs 11, 16, 16GC, 21, 22, and 26 is the second to be completed at NAS Oceana and addresses the Category 2 SWMUs.

2.4.1 Past Removal Actions

A CMS was conducted for five SWMUs (11, 18, 19, 20, and 24) identified in the RFI-Phase I that had soil contaminated with POL wastes. The POL CMS recommended soil removal actions be implemented at each of the five SWMUs investigated. The ETD PCS report provides detailed information pertaining to the excavation of the soils at these five sites. The following section summarizes the soil removal actions completed for the SWMU specific to this DD, SWMU 11.

SWMU 11

The POL CMS recommended that soil in excess of the VDEQ storage tank guidance notification standard of 100 milligrams per kilogram (mg/kg) of total petroleum hydrocarbon (TPH) be excavated from within and around the fire-fighting training rings. This cleanup goal is not driven by risk. Groundwater was sampled from the four existing wells onsite, as well as using Geoprobe in the former fuel farming area. The samples were analyzed for TPH, volatile organic compounds (VOCs), polyaromatic hydrocarbons (PAHs), and metals. Only benzene and two PAHs were detected in shallow groundwater (at one sampling point); however, at concentrations below their respective maximum contaminant levels (MCLs). A soil removal action was implemented as a follow-on to the POL CMS.

Following demolition of the fire ring walls and berm, accumulated sediments, contaminated gravel, and other debris were removed from the floor beneath both rings and disposed. The soil removal action consisted of removing soil in and around both fire rings. The north fire ring excavation depth averaged approximately 1 foot deep, while the south fire ring excavation depth averaged approximately 6 inches deep.

Based upon post-excavation confirmatory sampling, the cleanup goal was achieved at the bottom sampling locations. The excavations were backfilled and compacted to original

grade following the removal action. Results of the soil removal action are documented in the 1995 Excavation, Transportation, and Disposal of Petroleum-Contaminated Soils report.

2.5 Site Characteristics

2.5.1 Overview

Site Topography

The elevation of NAS Oceana ranges from approximately 5 feet above mean sea level (msl) in the drainage ditches to approximately 25 feet above msl in the open fields. Elevations in the developed area of the station range from 10 to 25 feet above msl. Topography of the station is generally flat with a gradual easterly slope to the land surface.

Surface Water Hydrology

Surface runoff from the station is facilitated by a system of drainage ditches and surface canals that flow southwest to West Neck Creek, north to London Bridge and Great Neck Creek, and east to Owls Creek and Lake Rudee. Early field investigations noted the presence of iron precipitate, organic odors, high turbidity, and thick brown algae mats in many ditches.

Geology/Hydrogeology

NAS Oceana is on the outer edge of the Atlantic Coastal Plain physiographic province. The Atlantic Coastal Plain is a broad wedge of unconsolidated sediments that dip and thicken to the east. In the vicinity of NAS Oceana, the sediments consist of several thousand feet of unconsolidated sand, clay, silt, and gravel that are underlain by granite basement rock. The sediments range in age from early Cretaceous to Recent. From oldest to youngest, the four geologic units underlying NAS Oceana are (1) the Potomac Formation, (2) the Pamunkey Group, (3) the Chesapeake Group, and (4) the Columbia Group. The geologic units of concern in the environmental investigations at NAS Oceana are in the Chesapeake Group (only the youngest unit, the Yorktown Formation) and the Columbia Group.

The Chesapeake Group has been differentiated into several units, which are, from oldest to youngest, the Calvert, Choptank, St. Mary's, Eastover, and Yorktown Formation. As mentioned above, only the Yorktown Formation is of potential concern at NAS Oceana. The Yorktown Formation consists of interbedded layers of shelly, very fine to coarse sands, clayey sands, and sandy clay. The Yorktown Formation is divided into three sand units, each overlain by a confining layer of silt and clay. Regionally, the uppermost of these silt and clay beds, which is referred to as the Yorktown confining unit, separates the Yorktown Formation from the sediments of the Columbia Group that overlie it. This uppermost bed consists of massive, well-bedded yellow-gray to greenish-gray clays and silty clays, which commonly contain shells, fine sand, and mica. The clay layers within the confining bed are generally extensive but are a series of coalescing clay beds rather than a single deposited unit. This unit was deposited in a shallow open-marine environment of broad lagoons and quiet bays. The Yorktown confining unit has not been encountered while drilling at NAS Oceana.

The sediments of the Columbia Group consist of interbedded gravel, sands, silts, and clays of Pleistocene and Holocene age. The Pleistocene and Holocene sediments were deposited

in fluvial-marine terrace and near-shore marine environments, including lagoons, beaches, tidal flats, and barrier islands. The Columbia Group sediments are, from oldest to youngest; (1) the Great Bridge Formation; (2) the Norfolk Formation; (3) the London Bridge Formation; and (4) the Sand Bridge Formation.

The Sand Bridge Formation consists of a pale, yellowish-brown silt to sandy silt, often characterized as being clayey. This formation extends from the surface to a depth of 3 to 6 feet. Underlying the Sand Bridge Formation is the London Bridge Formation, a bluish-gray, fine silty sand, which is generally 4 to 5 feet thick. The third member of the Columbia Group is the Norfolk Formation. This formation, which is approximately 8 to 11 feet thick, is a bluish-gray to gray, fine to medium sand with trace shell fragments. The Great Bridge Formation underlies the Norfolk. The Great Bridge has an upper and lower member. The upper member is a white to light gray, well-graded sand. The lower member exhibits similar grain sizes and colors, but contains minor amounts of pebble gravel and bluish shell fragments. The Great Bridge Formation ranges in thickness from 0 to 55 feet.

Groundwater at NAS Oceana is generally within 4 to 10 feet of the ground surface. Aquifer conditions are unconfined in the Columbia Group and unconfined to semiconfined within the upper Yorktown Formation. When the clay confining unit overlying the Yorktown is absent, the upper Yorktown is generally unconfined. Natural groundwater flow directions are generally south to southeast, but flow direction is controlled locally in the Columbia Group by drainage ditches. The flow direction in the Virginia Beach area is, therefore, highly variable because of the complexity of the drainage patterns.

There are seven wells on the base that extract groundwater from the subsurface. Two of the seven wells (designated WS-5 and WS-7) extract groundwater from the Columbia Aquifer. The others extract water from the underlying Yorktown Aquifer. Of the two wells in the Columbia Aquifer, one supplies water to a maintenance sink. The other well supplies a guard house bathroom. Both are posted as "Not for drinking water."

2.5.2 SWMU—Specific Site Characteristics

SWMU 11—Fire-Fighting Training Area

The immediate area around SWMU 11 consists of impervious concrete; however, the station is in the process of crushing this concrete in place to allow for infiltration. Following the concrete crushing operation, soil will be spread over the areas to promote the growth of vegetation. Grasses dominate the surrounding area to the east. A small wetland is located approximately 150 feet west of the training rings and approximately 25 feet west of the former fuel farm area. The emergent wetland only holds water immediately after rain events. The remaining area west of the site is comprised of old field and mowed grass. The near-surface geology consists of a 5- to 7-foot-thick layer of sandy clays with silty sands and clays. This layer is underlain by a 12- to 15-foot-thick layer of clean course sand.

SWMU 16—Pesticide Storage Area

The pesticide storage area adjacent to Building 821 is located within a fenced, undeveloped gravel lot. The area immediately adjacent to the storage area is composed of hard packed dirt and gravel and is used as a parking lot. Beyond the lot is a small hardwood forest. The lot slopes downward approximately 50 feet towards a small low-lying area located within

the forested habitat west of Building 821. Much of the surface flow from the site flows into this low-lying area, which is approximately 20 feet wide by 60 feet long, and ponds for varying periods of time. The closest surface stream is about 1,000 feet southwest of Building 821. Shallow soils on the site are silts, and sandy, lean clays.

SWMU 16GC—Pesticide Storage Area, Golf Course Maintenance Shop

The pesticide storage shack at SWMU 16GC is located adjacent to the Golf Course on the western side, and Buildings 798 and 799 on the southeastern side. Most of the interior of the three-sided, open front shack has a cement floor where pesticides were historically mixed and rinsed. A small portion of the shack interior has an exposed dirt floor. The area in front of the shack consists of hard-packed dirt. To the north of Building 798 is an open field with a small, shallow ditch running through it. The ditch begins about 20 feet north of the shack and drains northward into the Oceana NAS surface water drainage system ditches. Water is present in the ditch only intermittently and no aquatic habitats or communities are present. The field consists mostly of mowed grass.

SWMU 21—Transformer Storage Yard, Building 530

The Transformer Storage Yard consists of a fenced asphalt parking lot, two gravel storage areas, and an area of hard-packed dirt with some herbaceous vegetation. Beyond the site, to the southeast, is the golf course.

Drainage across the storage yard generally flows southeast. In the southeastern corner of the yard, an exposed storm sewer pipe extends from the asphalt, goes under the fence and underground into a manhole cover observed just inside the forested area southeast of the site. Surface runoff from the site is directed into this storm sewer pipe. Shallow soils are silts and sandy silts.

SWMU 22—Construction Debris Landfill

SWMU 22 is bounded by Oceana Boulevard to the east, a drainage ditch to the north, and an access road to the southwest. The ditch that runs along the northern boundary of the SWMU flows northeast and is not tidally influenced. Bottom sediments in the ditch were sandy. The deep depressional area in the main terminal loop of the road contains disturbed clayey soils, and little vegetation has become established. The site provides potential habitat for a variety of wildlife and aquatic species due to its proximity to water and cover. Near-surface geology consists of a 5- to 7-foot-thick layer of sandy silts and clay that is underlain by a 12- to 15-foot-thick layer of clean sands with fine to coarse grains.

SWMU 26—Fire-Fighting Training Area, Building 220

SWMU 26 is an area containing no vegetation other than mowed grass. A steam pipeline traverses the southern corner of the SWMU. Aside from the slight southeasterly slope from the former pit to the swale, the site is flat. The surface soils are sandy silts underlain by silty sands.

2.5.3 Description of Contamination

SWMU 11—Fire-Fighting Training Area

SWMU 11 was investigated five times. The first investigation was the IAS, which was followed by the Interim RFI and Phase I RFI. The Phase I RFI was followed by the POL CMS. Results of the follow-on soil removal action are documented in the 1995 Excavation, Transportation, and Disposal of Petroleum Contaminated Soils report. A comprehensive ERA following EPA guidance was issued in August 2001.

Initial Assessment Study—The IAS identified SWMU 11 as consisting of two fire-fighting training rings and their immediate surroundings. Waste oil, fuel, hydraulic fluid, paint, paint thinners, and solvents were used in the training fires. The IAS also reported that the area directly west of the fire training pits on the west side of the abandoned runway was used for the disposal of waste fuels and lubricants by fuel farming.

Interim RCRA Facility Investigation—The Interim RFI activities at SWMU 11 indicated that VOC constituents detected in a monitoring well were either near the detection limit or could be attributed to minor laboratory contamination.

Phase I RCRA Facility Investigation—The Phase I RFI at SWMU 11 involved a second round of groundwater sampling and also soil sampling directly adjacent to the training rings. VOCs, semivolatile organic compounds (SVOCs), and trace metals were either not detected in the groundwater and soils or were detected at or near the detection limit. TPHs were detected in the surface and subsurface soil samples.

Petroleum Oil Lubricant Corrective Measures Study—The POL CMS further characterized the groundwater and soil contamination to determine the appropriate corrective measures. Benzene and PAHs were detected at one shallow monitoring well. Four soil samples (including one duplicate sample) collected from the former fuel farming area were analyzed for TPH, VOCs, PAHs, and metals. One of the four samples had detections of VOCs and metals, but at concentrations lower than those detected in the Phase I RFI soil samples collected near the training rings.

Four soil samples also were collected directly adjacent to the training rings and analyzed for TPH. Some of these samples had elevated TPH concentrations, confirming the Phase I findings. Samples from around the rings contained TPH in concentrations exceeding 100 mg/kg, the VDEQ storage tank guidance notification standard. The POL CMS recommended that the soil in excess of the VDEQ storage tank guidance notification standard of 100 mg/kg of TPH be excavated from within and around the rings. This cleanup goal was not driven by risk.

As a follow-on to the POL CMS a soil removal action was implemented; VDEQ and EPA agreed to the 100 mg/kg cleanup goal for TPH in soils recommended in the POL CMS. Following demolition of the fire ring walls and berm, accumulated sediments, contaminated gravel, and other debris were removed from the floor beneath both rings and disposed. The soil removal action consisted of removing soil in and around both fire rings. The north fire ring excavation depth averaged approximately 1-foot, while the south fire ring excavation depth averaged approximately 6 inches.

Based upon post-excavation confirmatory sampling, the cleanup goal was achieved at the bottom sampling locations. The excavations were backfilled and compacted to original grade following the removal action. Results of the soil removal action are documented in the 1995 Excavation, Transportation, and Disposal of Petroleum-Contaminated Soils report.

Ecological Risk Assessment—One surface water and three surface sediment samples were collected from the adjacent wetland in December 1999 and evaluated in the ERA. Results of the ERA are discussed in Section 2.7.

2.5.4 SWMU 16—Pesticide Storage Area

SWMU 16 was investigated four times. The first investigation was the IAS, followed by the RFA and Phase I RFI. A comprehensive ERA following EPA guidance was issued in August 2001.

Initial Assessment Study—The IAS reported that rinse water from the pesticide-mixing tank was discharged directly onto the ground at the pesticide shop near Building 821 between 1968 and 1982. It was estimated that less than 30 pounds of the pesticides were discarded onto the ground during the 15-year period.

RCRA Facility Assessment—The RFA did not involve data collection. As documented in the RFA, Navy personnel stated that rinse water from the pesticide mixing tank was discharged directly onto the ground near Building 821. For this reason, SWMU 16 was included in the Phase I RFI.

Phase I RCRA Facility Investigation—The purpose of the Phase I RFI activities was to characterize the soil in the area that was used for pesticide storage. Surface soil samples were collected from the gravel lot just northeast of Building 821 and analyzed for pesticides, organophosphorous pesticides, and herbicides. Select samples also were analyzed for copper, arsenic, and lead. The Phase I RFI revealed that surface soil at Building 821 contained pesticides, copper, arsenic, and lead. Organophosphorous pesticide and herbicide compounds were not detected in surface soil samples.

Ecological Risk Assessment—Two surface soil samples and one surface water sample were collected in December 1999 from the low-lying area located southwest of Building 821. These samples were analyzed for pesticides and metals. Pesticides and metals were detected in the soil samples while only metals were detected in the surface water sample. Results of the ERA are discussed in Section 2.7.

2.5.5 SWMU 16GC—Pesticide Storage Area, Golf Course Maintenance Shop

SWMU 16GC was investigated four times. The first investigation was an IAS, followed by the RFA and the Phase I RFI. A comprehensive ERA following EPA guidance was issued in August 2001.

Initial Assessment Study—The IAS reported that residual pesticides have been rinsed out at the storage area at the Golf Course Maintenance Shop since 1956. The pesticides were stored in the Golf Course Barn—Building 798.

RCRA Facility Assessment—The RFA did not involve data collection. As documented in the RFA, Navy personnel stated that residual pesticides were rinsed over a concrete mixing pad outside Building 798. For this reason, SWMU 16GC was included in the Phase I RFI.

Phase I RCRA Facility Investigation—The purpose of the Phase I RFI was to characterize the soils to determine if contamination had occurred. Surface soil samples were collected near the shack and in the beginning portion of the drainage ditch. These samples were analyzed for pesticides, organophosphorous pesticides, and herbicides. Select samples also were analyzed for arsenic, lead, and copper. The Phase I RFI revealed that the soil contained chlorinated pesticides, organophosphorous pesticides, herbicide compounds, lead, copper, and arsenic.

Ecological Risk Assessment—Surface water and surface soil samples were collected from the drainage ditch in December 1999 for use in the ERA. The samples were analyzed for pesticides and metals. Pesticides and metals were detected in the soil samples. Only metals were detected in the surface water samples. Results of the ERA are discussed in Section 2.7.

2.5.6 SWMU 21—Transformer Storage Yard, Building 530

SWMU 21 was investigated four times. The first investigation was the IAS, followed by the RFA, Phase I RFI, and Phase III RFI. A comprehensive ERA following EPA guidance was issued in August 2001. This ERA did not involve the collection of new data.

Initial Assessment Study—The IAS reported old electrical transformers, which were known to contain PCBs, were stored on pallets over bare ground at the site since at least 1982, and maybe as early as the 1950s, until they could be disposed.

RCRA Facility Assessment—The RFA did not involve data collection. A visual site inspection indicated that electrical oil from old transformers was leaking onto the ground, and the vegetation down the slope from the storage yard appeared to be dead. For this reason, SWMU 21 was included in the Phase I RFI.

Phase I RCRA Facility Investigation—The purpose of the Phase I RFI activities was to characterize the soil at the two areas used to store old transformers. Six samples were collected from the soils in the gravel area near the parking lot and four samples were collected from the soils in the gravel area near the fence and analyzed for PCBs. Two samples near the parking lot also were analyzed for TPH. The Phase I RFI revealed that no PCBs were detected in the soil samples. The two soil samples that were analyzed for TPH did contain petroleum hydrocarbons (91 and 242 mg/kg).

Phase III RCRA Facility Investigation—The Phase III RFI field activities involved the collection of two shallow soil samples (0.5 to 1 feet) taken to confirm the results of the Phase I RFI soil sampling. A third sample (0.0 to 0.5 feet) was collected from the drainage feature located in the southern corner of the SWMU. All samples were analyzed for SVOCs. In addition, the third sample was analyzed for PCBs. Some PAHs were detected in all three samples (0.05 to 1.2 mg/kg). No PCBs were detected in the third sample at a detection limit of 42 micrograms per kilogram ($\mu\text{g}/\text{kg}$).

2.5.7 SWMU 22—Construction Debris Landfill

SWMU 22 was investigated three times. The first investigation was the RFA, which was followed by the Phase I RFI. A comprehensive ERA following EPA guidance was issued in August 2001.

RCRA Facility Assessment—The RFA did not involve data collection. No release controls were observed at the SWMU. The age of the landfill is unknown, but it was first discovered in 1986. The former permit status of this landfill is not known. Although the Navy designated and permitted this landfill for construction debris, controls on the landfill's waste stream did not prevent the disposal of other types of waste.

Phase I RCRA Facility Investigation—The purpose of the Phase I RFI was to characterize groundwater at SWMU 22, and to determine if there had been any impact on the nearby wetlands. Groundwater, surface water, and sediment samples were collected. Groundwater samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and total and dissolved metals. Samples from one well also were analyzed for Appendix IX constituents. Surface water and sediment samples were analyzed for VOCs, pesticides, PCBs, and total metals. Groundwater samples contained no pesticides, PCBs, herbicides, or dioxins/furans. Four common organic laboratory contaminants and some metals were found in the groundwater at low concentrations. A duplicate sediment sample contained low levels of VOCs, and four pesticide compounds were detected at low concentrations in all of the sediment samples. No pesticides were detected in the surface water. Metals were detected in the sediment and surface water, with concentrations generally higher in the downstream sediment sample relative to the upstream sediment sample.

Ecological Risk Assessment—Three surface soil samples were collected during December 1999 in the swale and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Metals, pesticides, SVOCs, and VOCs were detected in these soil samples, while PCBs were not. Results of the ERA are discussed in Section 2.7.

2.5.8 SWMU 26—Fire-Fighting Training Area, Building 220

SWMU 26 was investigated four times. The first investigation was the RFA, followed by the Phase I RFI and the Phase III RFI. A comprehensive ERA following EPA guidance was issued in August 2001.

RCRA Facility Assessment—The RFA consisted of a visual site inspection and interviews with Navy personnel. No samples were collected. The RFA documented that burn residue and water was periodically pumped out of the burn pit to surrounding soils. Inspectors observed that staining on the ground extended to a nearby drainage ditch. The burn pit had no release controls at the time. The pit, consisting of a 3- by 4-foot metal pan inset, has been removed and the area returned to grade.

Phase I RCRA Facility Investigation—The purpose of the Phase I RFI was to characterize soil near the training pit. Soil samples with the highest field VOC measurements were analyzed for VOCs, PAHs, TPH, metals, and ignitability in an offsite analytical laboratory. The Phase I RFI revealed that soils contained TPH, PAHs, VOCs, and metals.

Phase III RCRA Facility Investigation—The purpose of the Phase III RFI activities was to identify any subsurface petroleum contamination that may have resulted from the spillage

of flammable liquids used during fire-fighting training activities. Three subsurface soil samples were collected around the tank and in the base of the ditch. The samples with the highest organic vapor meter (OVM) readings were analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX), common fuel constituents, and PAHs. Only common laboratory contaminants, acetone and methylene chloride, were detected in the subsurface soils.

Ecological Risk Assessment—Three surface soil samples were taken during December 1999 in the swale and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Metals, pesticides, SVOCs, and VOCs were detected in these soil samples, while PCBs were not. Results of the ERA are discussed in Section 2.7.

2.6 Current and Potential Future Site and Resource Uses

NAS Oceana consists of approximately 6,000 acres within the City of Virginia Beach. NAS Oceana is located in the Tidewater region of Virginia and lies southeast of the City of Norfolk, immediately west of the Atlantic Ocean, and just south of the Chesapeake Bay.

More than 40 percent of the base is urbanized, including commercial, residential, and operations buildings; and runways, hangars, and similar structures. The base's undeveloped areas consist of farmland, open land, forest, and wetlands. Farmland, which comprises approximately 925 acres, is farmed by private producers under the Navy's agricultural outlease program. Major crops grown within the boundaries of the base are corn, soybeans, and winter wheat. Approximately 200 acres of open fields and meadows, and 600 acres of forest occur on NAS Oceana. The base's forested areas are dominated by pine, mixed pine-hardwood, and hardwood stands.

Wetlands comprise approximately 660 acres of the undeveloped areas. The U.S. Fish and Wildlife Service's (USFWS's) National Wetland Inventory (NWI) maps classify wetlands as palustrine emergent, palustrine scrub/shrub, and palustrine forested. However, onsite observations by a CH2M HILL ecologist during a 1992 site visit suggest that the NWI maps may underestimate the amount of forested wetlands on the base.

2.6.1 SWMU 11—Fire-Fighting Training Area

SWMU 11 consists of two fire-fighting training rings and their immediate surroundings. The site is on the northwestern side of NAS Oceana at the intersection of two abandoned runways. The current land use is classified as "Vegetation/Open" in the latest basewide planning document, *Master Plan, Master Jet Base, Naval Air Station Oceana, Virginia Beach, Virginia* (LANTDIV, December 1986). The base is currently restoring abandoned runways and taxiways by crushing the pavement/concrete in place and placing soil over these areas to support vegetation. The Navy anticipates that this land use at this site will remain as Vegetation/Open in the future; no long range base development requirements have identified this site for development of any kind.

2.6.2 SWMU 16—Pesticide Storage Area

SWMU 16 consists of a pesticide storage area adjacent to the pesticide shop at Building 821 in the base's Public Works Compound. The current land use is classified as "Public Works

Department" in the latest basewide planning document, *Master Plan, Master Jet Base, Naval Air Station Oceana, Virginia Beach, Virginia* (LANTDIV, December 1986). The Navy anticipates that the land use at this site will remain as the Public Works Compound in the future.

2.6.3 SWMU 16GC—Pesticide Storage Area, Golf Course Maintenance Shop

SWMU 16GC consists of the pesticide storage area at the Golf Course Maintenance Shop. The maintenance shop is still in use and is located within the NAS Oceana golf course. The current land use is classified as "Recreation" in the latest basewide planning document, *Master Plan, Master Jet Base, Naval Air Station Oceana, Virginia Beach, Virginia* (LANTDIV, December 1986). The Navy anticipates that the land use at this site will remain as Recreational, being part of the golf course, in the future.

2.6.4 SWMU 21—Transformer Storage Yard, Building 530

SWMU 21 is located in the southwestern corner of the Public Works Transportation Yard, approximately 400 feet southeast of Building 830. The current land use is classified as "Public Works Department" in the latest basewide planning document, *Master Plan, Master Jet Base, Naval Air Station Oceana, Virginia Beach, Virginia* (LANTDIV, December 1986). The Navy anticipates that the land use at this site will remain as the Public Works Compound in the future.

2.6.5 SWMU 22—Construction Debris Landfill

SWMU 22 is approximately 600 to 1,000 feet west of Oceana Boulevard and 1,500 feet north of the VACAPES complex. The current land use is classified as "Vegetation/Open" in the latest basewide planning document, *Master Plan, Master Jet Base, Naval Air Station Oceana, Virginia Beach, Virginia* (LANTDIV, December 1986). The Navy anticipates that this land use at this site will remain as Vegetation/Open in the future; no long range base development requirements have identified this site for development of any kind.

2.6.6 SWMU 26—Fire-Fighting Training Area, Building 220

SWMU 26 consisted of a partially buried drum, or small tank, former was used for fire extinguisher training at the base's fire station. The current land use is classified as "Maintenance/Production" in the latest base wide planning document, *Master Plan, Master Jet Base, Naval Air Station Oceana, Virginia Beach, Virginia* (LANTDIV, December 1986). The Navy anticipates that the land use at this site will remain as the base's fire station within the Maintenance/Production land use classification in the future.

2.7 Summary of Site Risks

A brief summary of the relevant portions of the human health and ecological risk assessments for each SWMU are presented in this section. These assessments provide the bases for the necessary action for each SWMU.

2.7.1 SWMU 11—Fire-Fighting Training Area

An evaluation of risk to human health was conducted as part of the Phase I RFI. The SWMU as a whole also was evaluated for ecological risk. Results are summarized below.

Human Health Risk Assessment

The Phase I RFI soil maximum detected concentrations were compared to applicable federal or Virginia standards or guidelines. The only compounds that exceeded potential standards or guidelines were TPH and beryllium. The maximum concentration of beryllium (0.63 mg/kg) exceeded the health-based criterion for carcinogens (0.143 mg/kg) and the proposed RCRA action level (0.20 mg/kg), which is based on noncarcinogenic effects.

Although the beryllium concentrations in the soil were higher than the RCRA action level, it was present in high concentrations at numerous sites throughout the station, and all but one sample were below the mean soil beryllium concentration of 0.55 mg/kg in the eastern United States (Shacklette and Boerngen, 1984).

The TPH concentrations in the soil exceeded the VDEQ underground storage tank regulatory standard for TPH of 100 mg/kg. No federal standards or risk-based concentrations exist for TPH. The results of the confirmatory sampling conducted during the POL CMS soil removal action indicated that soil with TPH greater than 100 mg/kg had been removed and the soil at SWMU 11 posed no unacceptable risk to human health. Therefore, no further action was recommended.

Ecological Risk Assessment

As agreed to in the new administrative procedure, conducting all cleanup activities following the procedural and substantive requirements of CERCLA while the RCRA Consent Order remains in effect, the Navy conducted an ERA at all NAS Oceana SWMUs to identify the ecological concerns and processes to be followed at each SWMU.

Groundwater level measurements show the water table to be approximately 6 feet below ground surface and flowing south, southwest. Thus, groundwater beneath the SWMU is not discharging to the wetland. Water is only present in the wetland area for a few days after significant storm events. Therefore, groundwater was not evaluated at this site. The wetland may receive contaminants via surface water runoff from exposed or eroding surface soils during heavy precipitation. Ecological receptors using these habitats can be exposed to chemicals in surface soil, surface sediment, and surface water via direct exposure pathways (including ingestion and direct contact) or via the food-chain.

The ERA concluded that potential risks to terrestrial organisms utilizing SWMU 11 are expected to be low to negligible based on the lack of screening value exceedances. Potential risks to aquatic organisms utilizing SWMU 11 are expected to be low to negligible. Based on the ERA performed at SWMU 11, no further action was recommended.

Conclusions and Recommendations

The assessment of risk information as related to both human health and the environment is detailed in the preceding sections for SWMU 11. These sections provide the investigation summary information and rationale to determine that SWMU 11 poses no unacceptable risk.

to human health or the environment. Therefore, no further action is necessary at this SWMU.

2.7.2 SWMU 16—Pesticide Storage Area

An evaluation of risk to human health was conducted as part of the Phase I RFI. The SWMU as a whole also was evaluated for ecological risk. Results are summarized below.

Human Health Risk Assessment

The Phase I RFI soil maximum detected concentrations were compared to RCRA action levels to determine the presence of contaminants of potential concern (COPCs). RCRA action levels are based on noncarcinogenic effects. All detected concentrations were well below the proposed RCRA action levels. No human-health standards were available for copper or lead. The Phase I RFI concluded that the contaminants detected during the investigation of SWMU 16 were at such low concentrations that the site does not pose an unacceptable risk to human health. Therefore, no remedial action was recommended.

Ecological Risk Assessment

As agreed to in the new administrative procedure, conducting all cleanup activities following the procedural and substantive requirements of CERCLA while the RCRA Consent Order remains in effect, the Navy conducted an ERA at all NAS Oceana SWMUs to identify the ecological concerns and processes to be followed at each SWMU.

A small low-lying area is located southwest of Building 821 and may have received surface water runoff from SWMU 16 during periods of heavy precipitation. Habitats present at SWMU 16 include a small deciduous wood lot that contains a small low-lying area that periodically collects standing water. Soils in the parking lot immediately adjacent to Building 821 were not evaluated since potential exposures in this unvegetated area composed of hard-packed dirt and gravel are considered negligible. Since water is not present in the low-lying area long enough for the soils to be considered sediments (they showed no evidence of hydric reduction), the "sediment" sample taken from the low-lying area in December 1999 was treated as a surface soil sample in the ERA. However, because the water is sometimes present, the sample results were also evaluated to determine any possible risk to aquatic invertebrates. Ecological receptors utilizing these habitats can be exposed to chemicals in surface soil and surface water.

The ERA concluded that potential risks to terrestrial organisms or aquatic invertebrates at SWMU 16 are expected to be low to negligible. Based on the ERA performed at SWMU 16, no action is recommended.

Conclusions and Recommendations

The assessment of risk information as related to both human health and the environment is detailed in the preceding sections for SWMU 16. These sections provide the investigation summary information and rationale to determine that SWMU 16 poses no unacceptable risk to human health or the environment. Therefore, no action is necessary at this SWMU.

2.7.3 SWMU 16GC—Pesticide Storage Area, Golf Course Maintenance Shop

An evaluation of risk to human health was conducted as part of the Phase I RFI. The SWMU as a whole also was evaluated for ecological risk. Results are summarized below.

Human Health Risk Assessment

The Phase I RFI soil maximum detected concentrations were compared to RCRA action levels to determine COPCs. RCRA action levels are based on noncarcinogenic effects. All detected concentrations were well below the proposed RCRA action levels. No human health standards were available for chlorpyrifos (organopesticide), dicamba (herbicide), copper, or lead. The maximum concentrations of these constituents were compared to EPA Region III risk based concentrations (RBCs). The maximum concentration of chlorpyrifos (1.2 mg/kg), dicamba (0.051 mg/kg), and copper (10.8 mg/kg) are below their residential RBCs of 230 mg/kg, 2,300 mg/kg, and 3,100 mg/kg, respectively. There is no RBC for lead, however the maximum concentration of lead (22.1 mg/kg) is below 400 mg/kg, the USEPA residential child screening level (OSWER Directive #9200.4-27P, December 1996).

The Phase I RFI concluded that the contaminants detected during the investigation of SWMU 16GC were at such low concentrations that the site does not pose an unacceptable risk to human health. Therefore, no remedial action was recommended.

Ecological Risk Assessment

As agreed to in the new administrative procedure, conducting all cleanup activities following the procedural and substantive requirements of CERCLA while the RCRA Consent Order remains in effect, the Navy conducted an ERA at all NAS Oceana SWMUs to identify the ecological concerns and processes to be followed at each SWMU.

Terrestrial habitats present at SWMU 16GC include mowed lawn, the drainage swale, and a few trees. Surrounding habitats consist of the golf course. Since water is not present in the swale area long enough for the soils to be considered true sediments, the "sediment" samples taken from the swale in December 1999 were treated as surface soil samples in this ERA. Aquatic habitats are not present at this SWMU. Ecological receptors utilizing these habitats can be exposed to chemicals in surface soil and surface water.

The ERA concluded that potential risks to terrestrial organisms at SWMU 16GC are expected to be negligible. Based on the ERA performed at SWMU 16GC, no action is necessary.

Conclusions and Recommendations

The assessment of risk information as related to both human health and the environment is detailed in the preceding sections for SWMU 16GC. These sections provide the investigation summary information and rationale to determine that SWMU 16GC poses no unacceptable risk to human health or the environment. Therefore, no action is necessary at this SWMU.

2.7.4 SWMU 21—Transformer Storage Yard, Building 530

An evaluation of risk to human health was conducted as part of the Phase III RFI. The SWMU as a whole also was evaluated for ecological risk. Results are summarized below.

Human Health Risk Assessment

The Phase III RFI soil maximum detected concentrations were compared to the EPA Region III RBCs for soil ingestion by a residential receptor. The comparison revealed no exceedances of the RBCs in any of the Phase III RFI surface soil samples, and the soil at SWMU 21 does not pose a threat to human health. Therefore, no remedial action was recommended.

Ecological Risk Assessment

As agreed to in the new administrative procedure, conducting all cleanup activities following the procedural and substantive requirements of CERCLA while the RCRA Consent Order remains in effect, the Navy conducted an ERA at all NAS Oceana SWMUs to identify the ecological concerns and processes to be followed at each SWMU.

Surface drainage across the SWMU is towards the southeast into a storm sewer pipe. There are no known areas of groundwater discharge to surface water within the SWMU's vicinity. The only habitat at SWMU 21 consists of a small area of bare, hard packed dirt and gravel with a small amount of vegetation, considered to be of minimal quality. Ecological receptors utilizing this habitat could potentially be exposed to chemicals in the surface soil. There are no transport pathways to the forested area located southwest of the site.

The ERA concluded that potential risks to terrestrial organisms utilizing the limited habitats present on SWMU 21 are expected to be negligible based on the lack of screening value exceedances. Based on the ERA performed at SWMU 21, no action is recommended.

Conclusions and Recommendations

The assessment of risk information as related to both human health and the environment is detailed in the preceding sections for SWMU 21. These sections provide the investigation summary information and rationale to determine that SWMU 21 poses no unacceptable risk to human health or the environment. Therefore, no action is necessary at this SWMU.

2.7.5 SWMU 22—Construction Debris Landfill

An evaluation of risk to human health was conducted as part of the Phase I RFI. An additional evaluation of risk to human health from surface soil collected as part of the ecological risk assessment in December 1999 was conducted at a later date, as documented below. The SWMU as a whole also was evaluated for ecological risk. Results are summarized below.

Human Health Risk Assessment

During the Phase 1 RFI, inorganic constituents in groundwater were compared to MCLs. The comparison revealed no exceedances. The pesticide compounds detected in the sediment did not exceed National Oceanic and Atmospheric Administration (NOAA) guidelines. Inorganics in sediment and surface water were compared to RCRA action levels (based on noncarcinogenic effects) and MCLs, respectively. There were no exceedances of the RCRA action levels and MCLs.

As part of the ecological risk assessment, surface soil samples were collected. Therefore, constituents detected in the surface soil were evaluated to determine if site activities would

adversely impact human health. This evaluation included the comparison of surface soil maximum detected concentrations to RBCs. This comparison revealed maximum detected concentrations for aluminum, arsenic, and iron at levels above residential soil RBCs. However, these constituents are not considered to be site-related and were detected at concentrations that are comparable to the background concentrations for Eastern United States (USGS, *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States*, 1984). Therefore, as a result of this screening evaluation and the conclusions of the Phase 1 RFI, the concentrations detected at SWMU 22 do not pose unacceptable risks to human health above background levels. Therefore, no remedial action is recommended.

Ecological Risk Assessment

As agreed to in the new administrative procedure, conducting all cleanup activities following the procedural and substantive requirements of CERCLA while the RCRA Consent Order remains in effect, the Navy conducted an ERA at all NAS Oceana SWMUs to identify the ecological concerns and processes to be followed at each SWMU.

Groundwater level measurements show that groundwater flow is north or northwest towards a large drainage ditch. Groundwater discharge to the ditch may be contributing to surface water and sediment contamination. Surface water runoff from the exposed waste during periods of heavy precipitation may transport contaminants to down-gradient surface soils, surface water, and sediment. Ecological receptors utilizing these habitats can be exposed to chemicals in surface soil, surface sediment, and surface water. The ERA concluded that potential risks to terrestrial organisms at SWMU 22 are expected to be negligible.

Also, aquatic habitats present within SWMU 22 consist of a small drainage ditch. The ERA concluded that potential risks to aquatic receptors are low to negligible. Based on the ERA performed at SWMU 22, no remedial action is recommended.

Conclusions and Recommendations

The assessment of risk information as related to both human health and the environment is detailed in the preceding sections for SWMU 22. These sections provide the investigation summary information and rationale to determine that SWMU 22 poses no unacceptable risk to human health or the environment. Therefore, no action is necessary at this SWMU.

2.7.6 SWMU 26—Fire-Fighting Training Area, Building 220

An evaluation of risk to human health was conducted as part of the Phases I and II RFIs. The SWMU as a whole also was evaluated for ecological risk. Results are summarized below.

Human Health Risk Assessment

During the Phase I RFI, the maximum detected concentrations of VOCs and metals in soil were compared to applicable human health criteria, including RCRA action levels or RBCs. No VOCs detected at SWMU 26 exceeded applicable human-health criteria. The maximum beryllium concentration in the soil (0.83 mg/kg) exceeded the health-based criterion for carcinogens (0.143 mg/kg) as well as the RCRA action level (0.20 mg/kg), which is based on noncarcinogenic effects. However, all beryllium concentrations were below the quantitative detection limit and all but one sample were below the average beryllium background

concentration of 0.55 mg/kg in the eastern United States (Shacklette and Boerngen, 1984). The maximum arsenic concentration in the soil (14 mg/kg) exceeded the carcinogenic RBC (3.8 mg/kg) for industrial soil. However, as with beryllium, all but one sample had concentrations of arsenic that were below the average arsenic background concentration of 4.8 mg/kg in the eastern United States (Shacklette and Boerngen, 1984).

No health-based criteria or RCRA action levels were available for detected PAHs; however, the detected concentrations were below the naphthalene RBC in residential soils.

TPH concentrations slightly exceeded the 100 mg/kg VDEQ storage tank guidance notification standard, however, this notification standard is not driven by risk. There is no current risk-based level for TPH that can be used for determining potential impacts on human health. Additionally, all of the PAH constituents were detected at concentrations below human health levels, therefore, the overall risk is expected to be below acceptable levels.

During the Phase III RFI, the maximum detected concentrations of acetone and methylene chloride in soil were compared to the EPA Region III RBCs for the residential receptor. The comparison revealed no exceedances of the residential RBCs in any of the subsurface soil samples collected at SWMU 26 during the Phase III RFI.

Based on the Phase I and Phase III RFI assessments, the subsurface soil at SWMU 26 does not pose an unacceptable risk to human health, and no remedial action was recommended.

Ecological Risk Assessment

As agreed to in the new administrative procedure, conducting all cleanup activities following the procedural and substantive requirements of CERCLA while the RCRA Consent Order remains in effect, the Navy conducted an ERA at all NAS Oceana SWMUs to identify the ecological concerns and processes to be followed at each SWMU.

Only data from the December 1999 sampling were used in the ERA since these data are more recent and focus on the surface strata. At SWMU 26, habitat is limited to a mowed grassy swale surrounded by pavement. There are no outlets from the swale to any other areas. Burn residue and water from the tank were occasionally pumped from the tank into the adjacent mowed swale, where it was allowed to seep into the ground. There are no known areas of groundwater discharge to surface water on or near this SWMU. Ecological receptors can be exposed to chemicals in surface soils within this swale.

The ERA concluded that potential risks to terrestrial organisms at SWMU 26 are expected to be low to negligible. Based on the ERA performed for SWMU 26, no remedial action was recommended.

Conclusions and Recommendations

The assessment of risk information as related to both human health and the environment is detailed in the preceding sections for SWMU 26. These sections provide the investigation summary information and rationale to determine that SWMU 26 poses no unacceptable risk to human health or the environment. Therefore, no action is necessary at this SWMU.

2.8 Selected Remedy

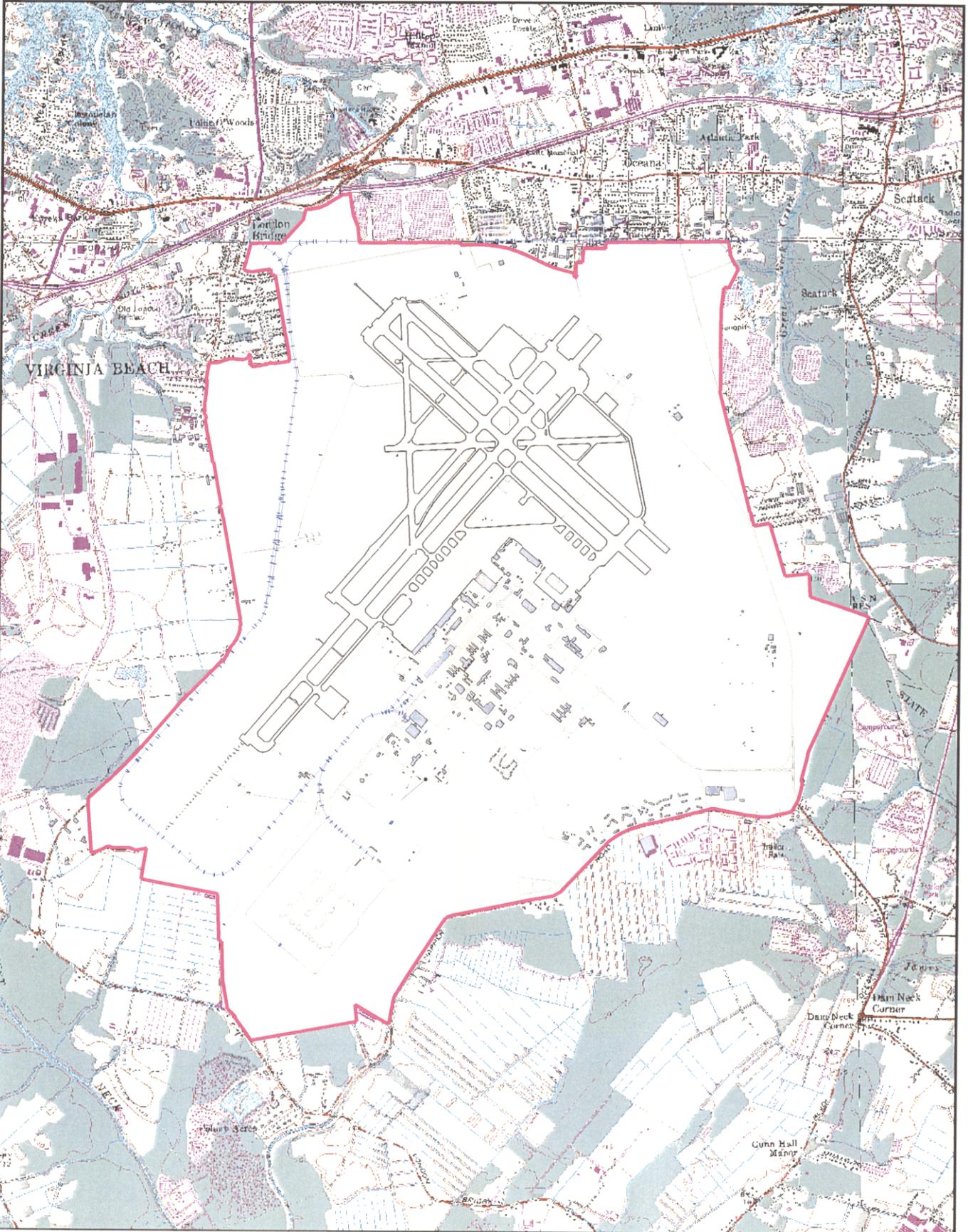
Previous investigations of SWMUs 11, 16, 16GC, 21, 22, and 26 have determined that these sites pose no unacceptable human health or ecological risk. Therefore, no CERCLA remedial action is necessary to protect public health or the environment.

2.9 Documentation of Significant Changes

The PRAP for NAS Oceana SWMUs 11, 16, 16GC, 21, 22, and 26 was released for public comment on August 13, 2001. The PRAP identified the No Action alternative as the Preferred Alternative. Other than the questions asked during the August 16, 2001 public meeting, which are documented in Appendix A (Certified Transcript of Public Meeting), no written or verbal public comments were received. No changes to the Preferred Alternative, as identified in the PRAP, are necessary or appropriate.

Figures

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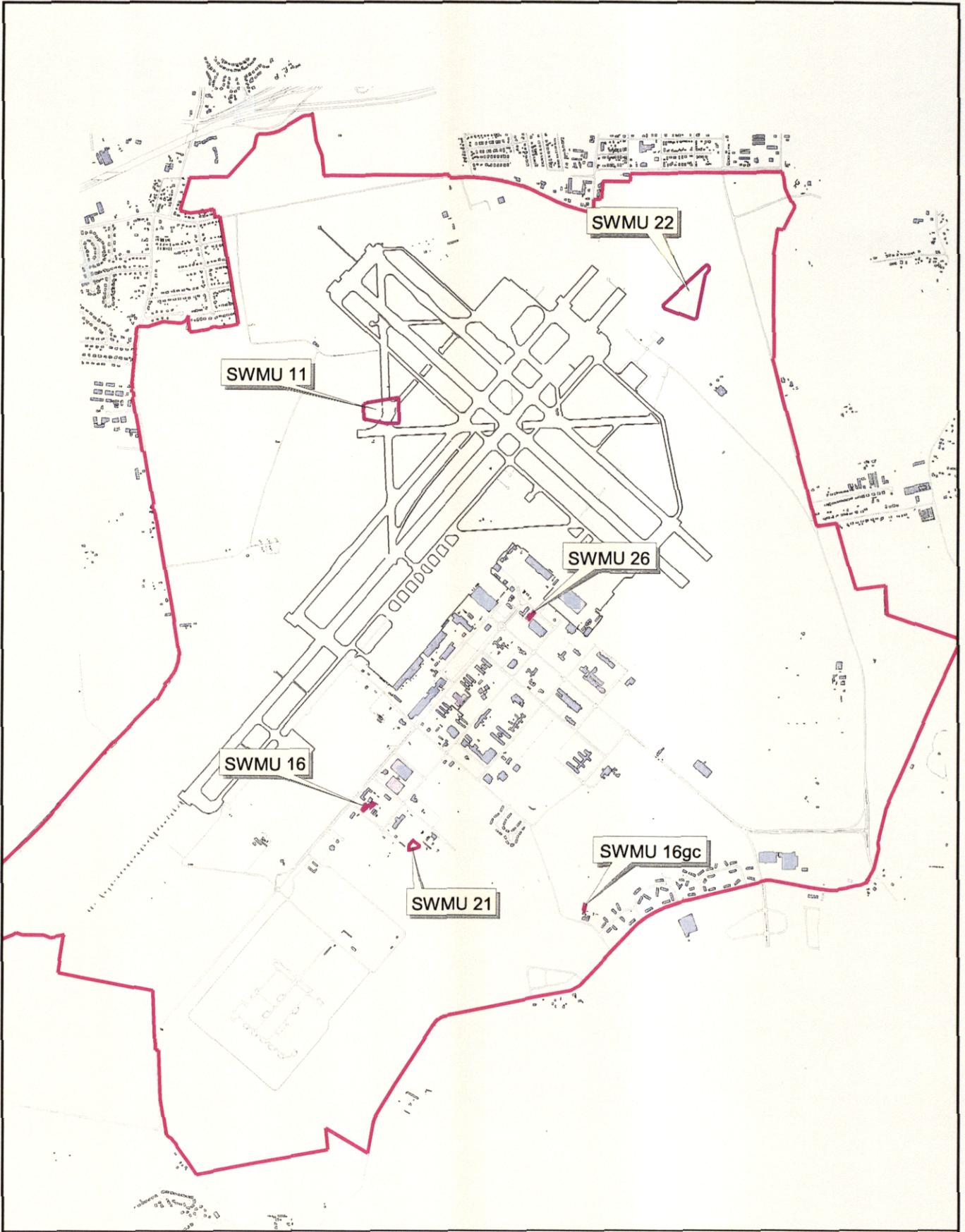
-  Activity Boundary Line
-  Buildings



2000 0 2000 4000 Feet

Figure 2-1
Base Map
NAS Oceana, Virginia Beach, Virginia

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 SWMU Boundary

 Buildings

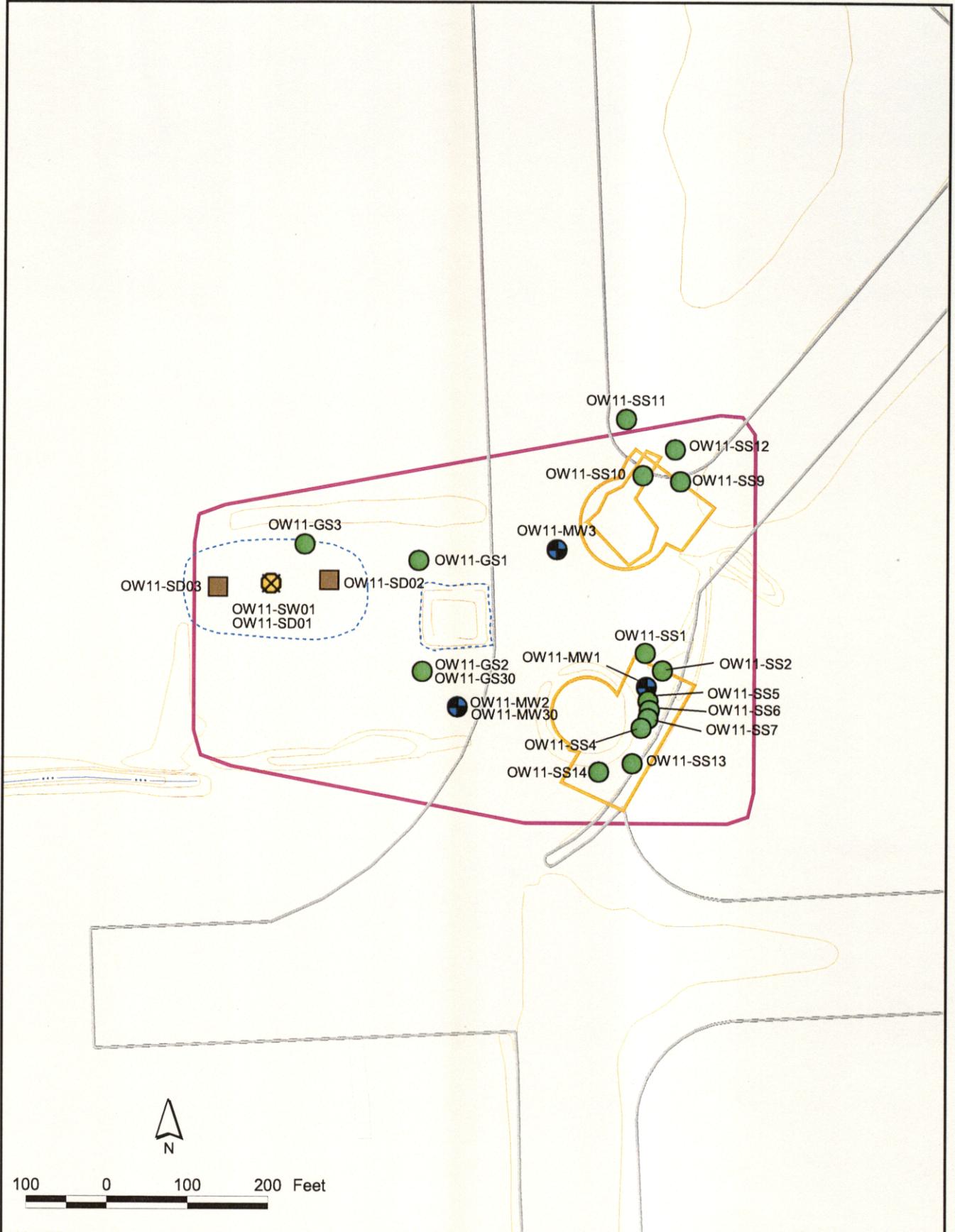
 Activity Boundary Line



1000 0 1000 2000 Feet



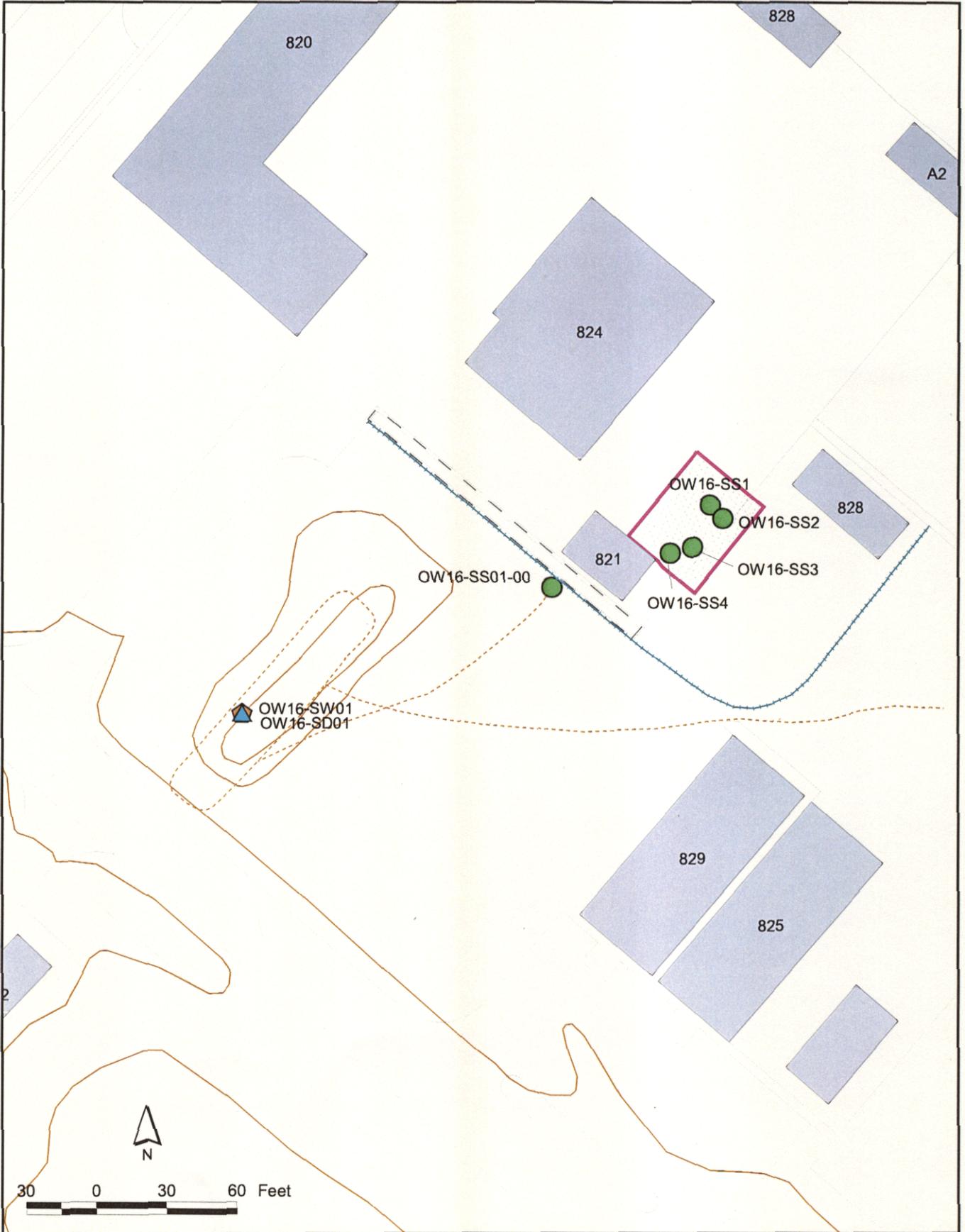
Figure 2-2
SWMU Location Map
NAS Oceana, Virginia Beach, Virginia



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- Monitoring Well
- Soil Sample
- Surface Water and Sediment Sample
- Sediment Sample
- Activity Boundary Line
- Soil Removal Area
- SWMU Boundary

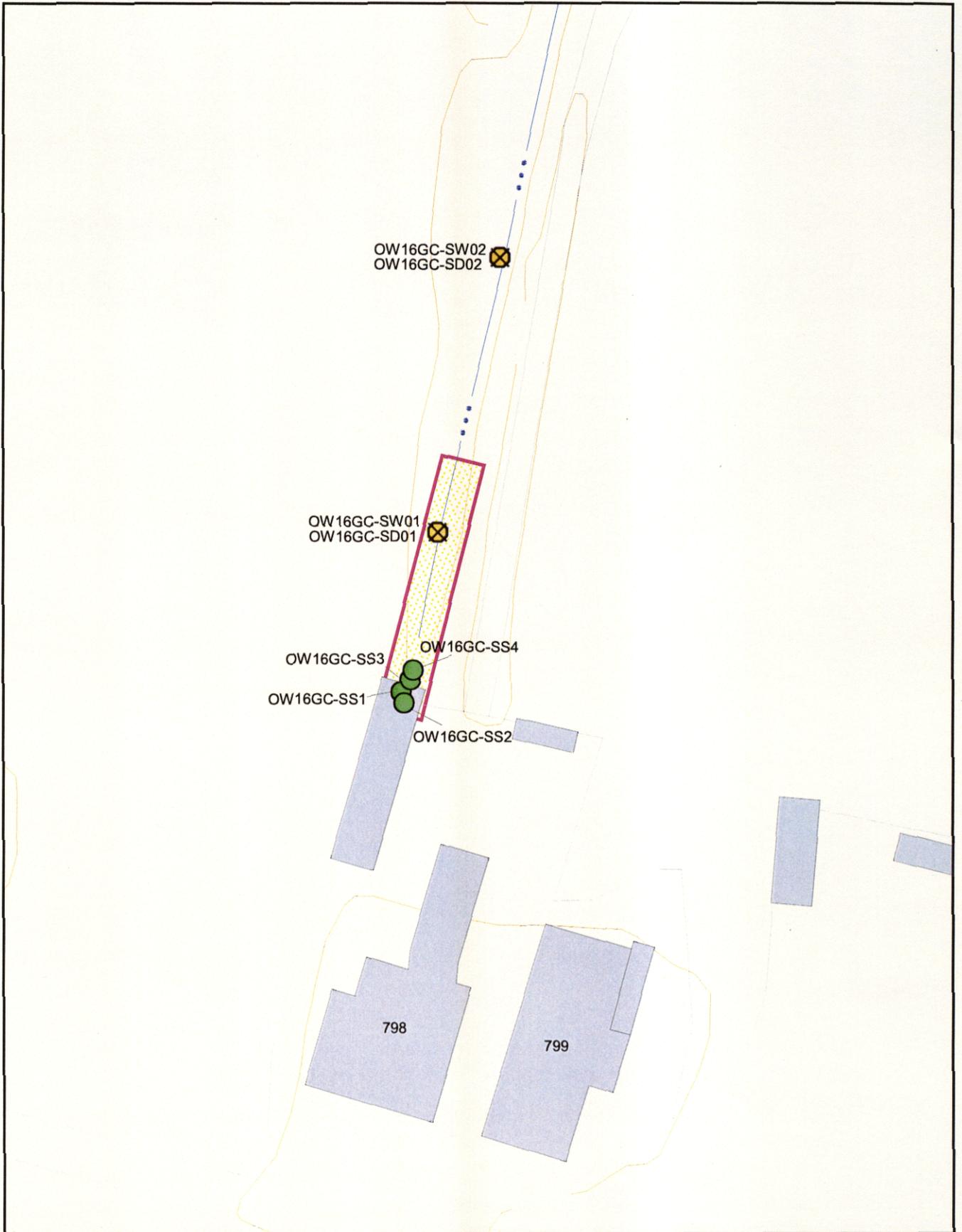
Figure 2-3
SWMU 11
NAS Oceana, Virginia Beach, Virginia



LEGEND

- | | |
|---|--|
|  Soil Sample |  Concrete Pad |
|  Surface Water Sample |  Fence Line |
|  Sediment Sample |  Contours |
|  Buildings |  Surface Water Drainage Swale |
|  SWMU Boundary | |

Figure 2-4
SWMU 16
NAS Oceana, Virginia Beach, Virginia



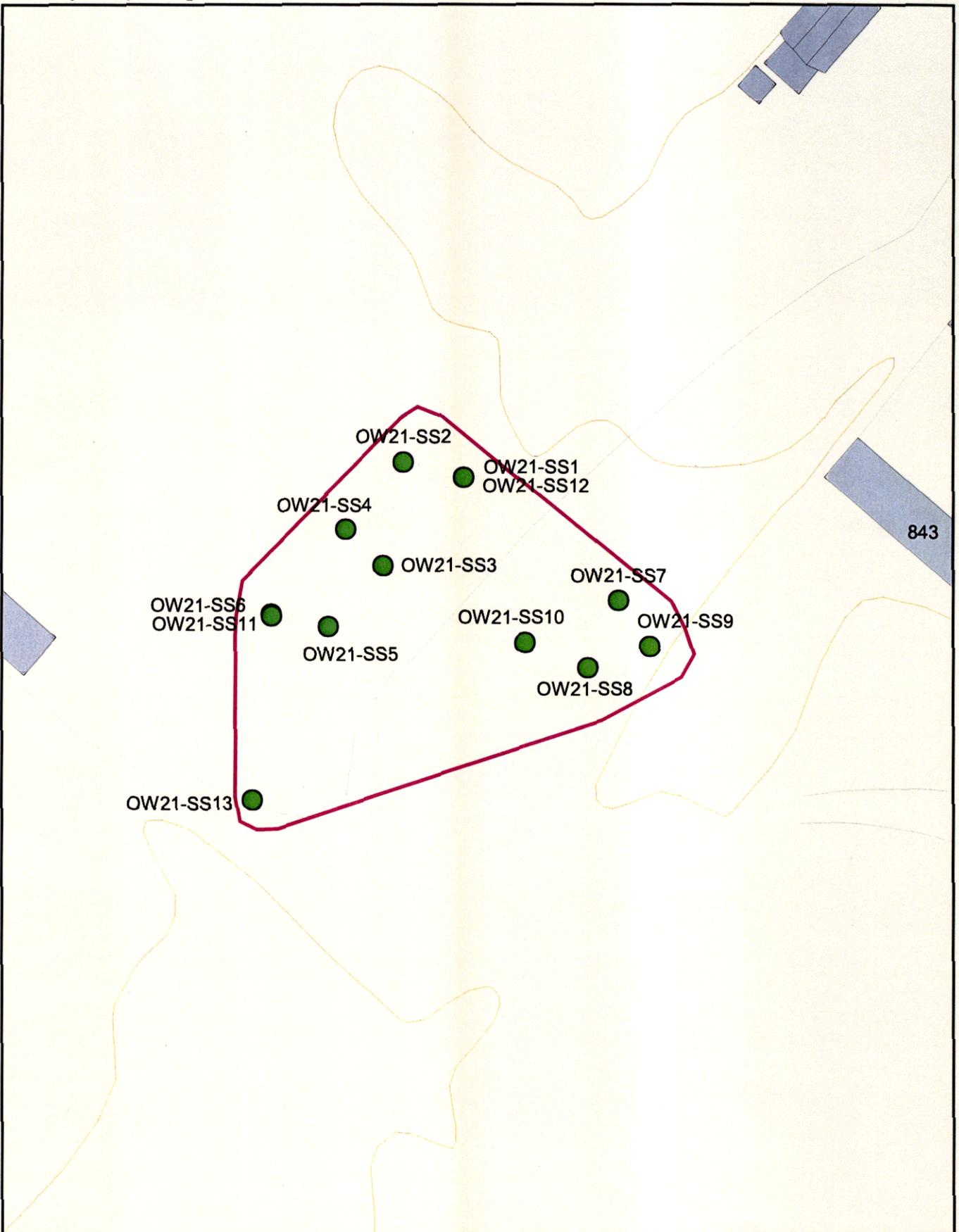
LEGEND

-  Soil Samples
-  Surface Water and Soil Samples
-  Buildings
-  Activity Boundary Line
-  Stormwater Drain



30 0 30 60 Feet

Figure 2-5
SWMU 16GC
NAS Oceana, Virginia Beach, Virginia



LEGEND

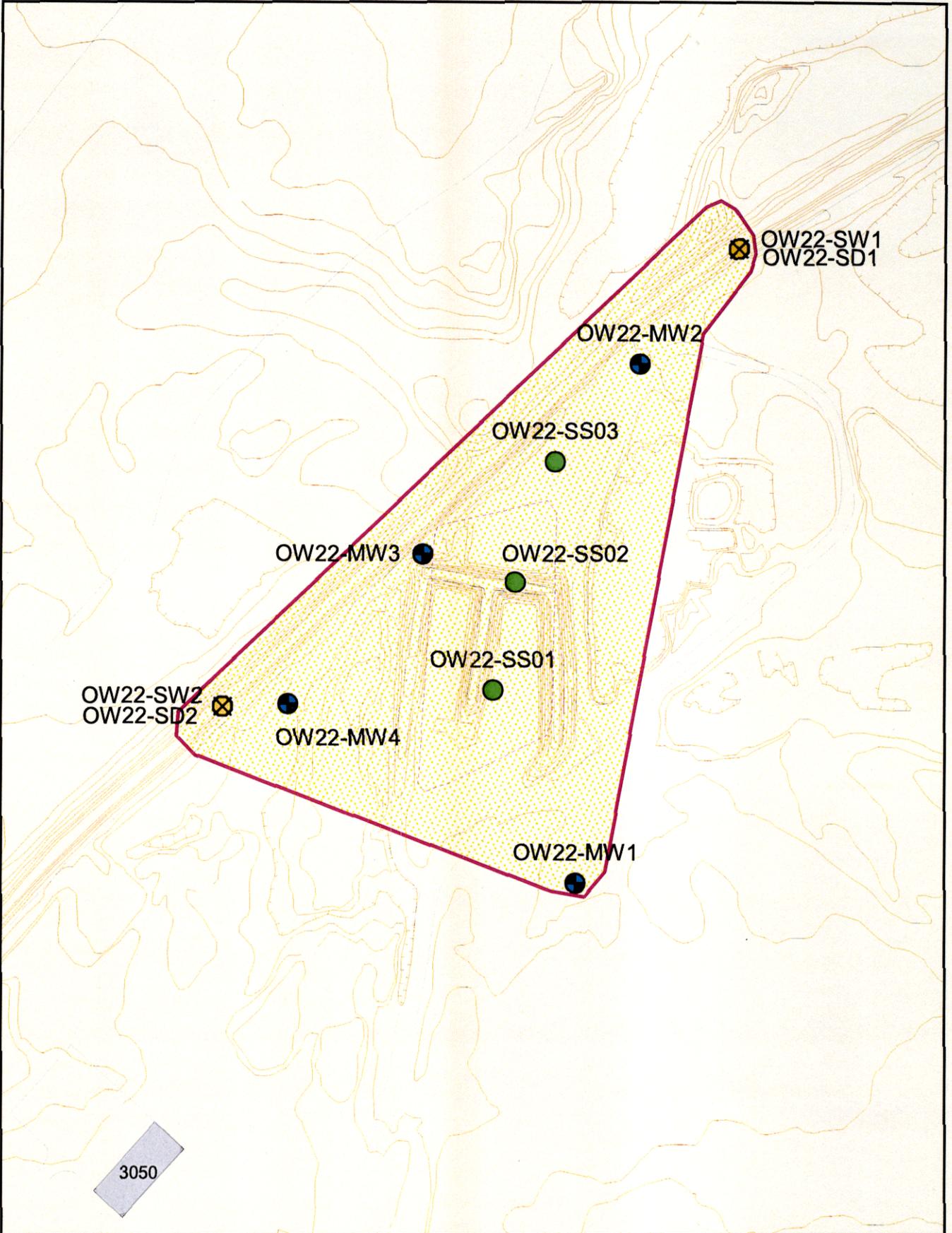
-  Soil Sample
-  Buildings
-  Activity Boundary Line
-  SWMU Boundary



30 0 30 60 Feet



Figure 2-6
SWMU 21
NAS Oceana, Virginia Beach, Virginia



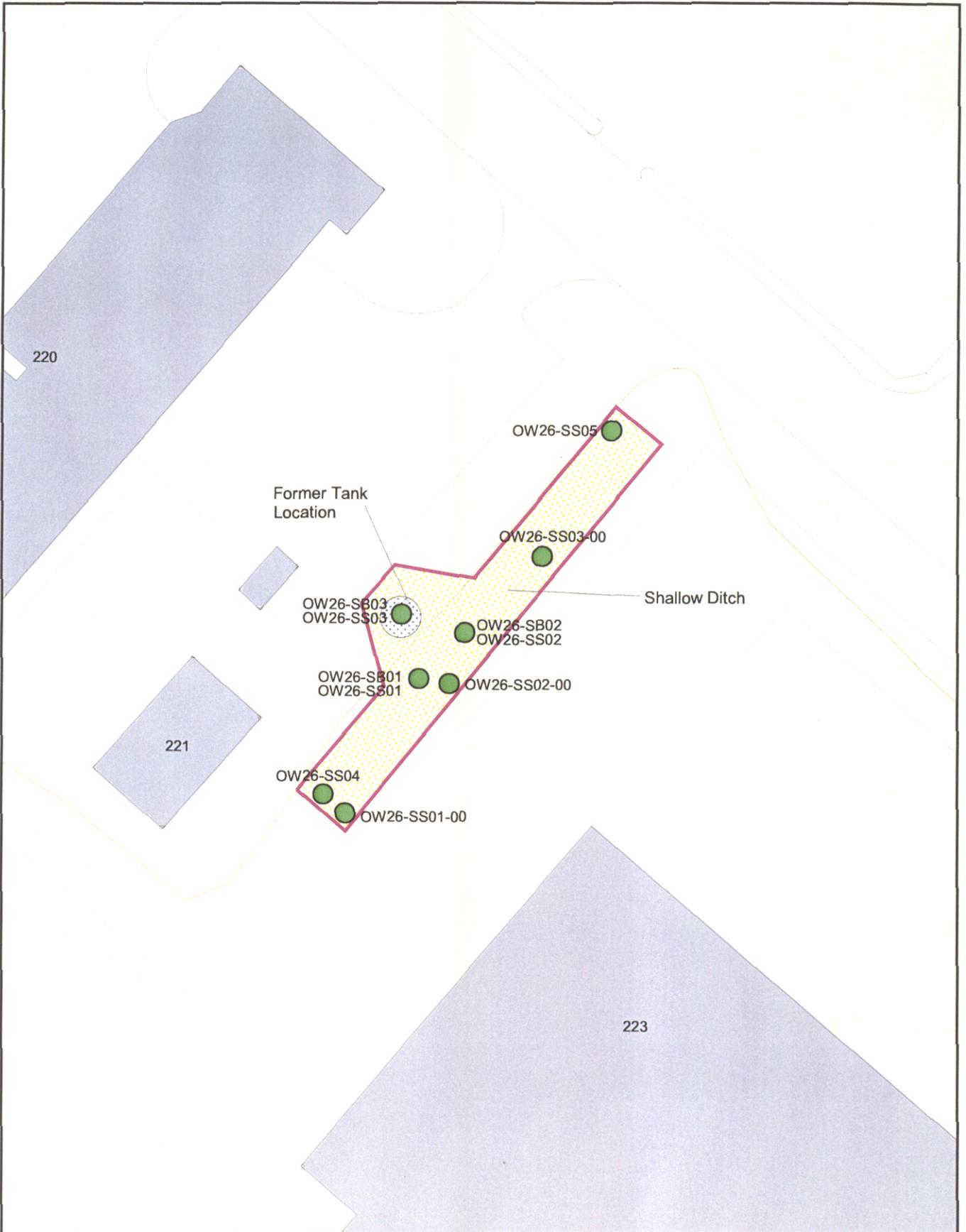
LEGEND

-  Monitoring Well
-  Soil Sample
-  Surface Water and Sediment Sample
-  Buildings
-  SWMU Boundary
-  Activity Boundary Line



100 0 100 200 Feet

Figure 2-7
SWMU 22
NAS Oceana, Virginia Beach, Virginia



LEGEND

-  Soil Sample
-  Buildings
-  Activity Boundary Line
-  SWMU Boundary



20 0 20 40 Feet

Figure 2-8
SWMU 26
NAS Oceana, Virginia Beach, Virginia

SECTION 3

Responsiveness Summary

As required by CERCLA §117 and NCP §§300.430(f)(3)(i)(F) and 300.430(f)(5)(iii)(B), a public comment period, from August 13, 2001 to September 12, 2001, was conducted and a Public Meeting was held on August 16, 2001 to present the PRAP and answer any questions on the PRAP or any of the other documents in the information repository. The only participants in the Public Meeting were representatives from the Navy, EPA, and the NAS Oceana Restoration Advisory Board (RAB) co-chair.

Other than the questions asked during the public meeting by the RAB co-chair, no written or verbal public comments were received. The questions specific to the SWMUs documented in this DD pertained to the location of SWMU 22 and whether there is farming activity at the SWMU. The Navy clarified the location of the SWMU, and also clarified that farming activity is currently taking place at a different NAS Oceana SWMU, SWMU 25.

A copy of the certified transcript from the Public Meeting is included in Appendix A. This transcript also documents the public meeting (held on the same day) for NAS Oceana SWMUs 1, 15, and 24, and provides some information on SWMU 25, all of which will be documented in detail under separate DDs.

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Appendix A
Certified Transcript of Public Meeting

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CERTIFIED ORIGINAL

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PROPOSED REMEDIAL ACTION PLAN FOR
SWMUs 1, 15, 24 and 11, 16, 16GC, 21, 22, and 26

TRANSCRIPT OF PROCEEDINGS

August 16, 2001

Naval Air Station Oceana

Virginia Beach, Virginia

7:01 p.m.

Present:

John Ballinger, Outreach coordinator

Robert C. Spadaccini, Sr., RAB Community co-chairman

Timothy A. Reisch, Naval Facilities Engineering

Command

Robert W. Stroud, Remedial Project Manager, EPA Region

III

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Norfolk, Virginia

1 MR. REISCH: We will go through SWMUs
2 proposal remedial action plan for SWMUs 1, 15, and
3 24. I am going to read the preamble, and then we can
4 go through the -- quickly through the presentation,
5 the Power Point slides for that, go through the
6 remedial alternatives.

7 The Department of Navy has identified
8 preferred remedial alternatives to address
9 contaminated soil and groundwater of solid waste
10 management units 1, 15, and 24 located on Naval Air
11 Station Oceana, Virginia Beach, Virginia.

12 Based on the results of environmental
13 investigations and human health and ecological risk
14 assessments, the preferred remedial alternative for
15 SWMU 1 is free product removal with long-term
16 monitoring of groundwater and institutional controls.

17 The preferred remedial alternative for
18 SWMU 15 is soil, land farming, and long-term
19 monitoring of groundwater with institutional controls.

20 The preferred remedial alternative for
21 SWMU 24 is long-term monitoring of groundwater with
22 institutional controls. These preferred alternatives
23 for SWMUs 1, 15, and 24 meet the national contingency
24 plan criteria in the most appropriate, applicable, and
25 cost-effective manner. These alternatives are

1 described in detail in the proposed remedial action
2 plan.

3 This presentation that I have handed out
4 is -- outlines the proposed remedial action plan and
5 the alternatives selected for SWMUs 1, 15, and 24.
6 The public comment period began August 13th, 2001 and
7 will continue through September 12th, 2001. All
8 public comments must be postmarked no later than
9 September 12th, 2001. All documents are --
10 investigation documents pertaining to SWMUs 1, 15, and
11 24 are located in the Virginia Beach Public Library in
12 the administrative record.

13 The first figure shows a base map of the
14 sites showing SWMU 1, which is the West Woods oil pit,
15 SWMU 15 is the North Station tank, former tank farm,
16 and SWMU 24 is the Seabee compound.

17 SWMU 1, as I mentioned, is the West Woods
18 oil pit, basically operated from the 1950s into the
19 1960s, was a large open pit where the station disposed
20 of waste fuel and petroleum products. In early 1960s,
21 a storm swept through the area and emptied the
22 contents of the pit into the nearby drainage ditch, at
23 which time the waste disposal practice in the SWMU was
24 discontinued and the pit was subsequently filled with
25 soil.

1 The previous investigation -- as you can
2 see, it's been looked at many times, with the latest
3 sampling of that being groundwater sampling in January
4 2000. Our previous investigations not only
5 investigated, delineated the site contaminations to be
6 petroleum related, but also tried some innovative
7 technology to try to get the sheen or the skim of oil
8 on the top of the aquifer out. But that was
9 unsuccessful, and there was a small amount of product
10 out there.

11 We have conducted human health risk
12 assessment, which was completed in January of 2001.
13 There are -- there are two components of a human
14 health risk assessment: Carcinogenic risks and
15 noncarcinogenic risks.

16 There are no carcinogenic risks at SWMU
17 1. There is a noncarcinogenic risk at SWMU 1 for
18 groundwater exposure for a future child or resident
19 under a residential scenario. We have recently
20 completed an ecological risk assessment in June 2001.
21 Based on the ecological risk assessment and risk
22 management decisions, no further action is required
23 from an ecological perspective.

24 With the human health risk -- with the
25 human health risk for a future residential scenario,

1 the alternatives that were -- was selected is continue
2 the free product removal, the solar skimmers, and to
3 provide institutional controls, which the station will
4 enact to prevent residential use of that groundwater.
5 And that's something that we'll have to work out with
6 EPA, DEQ, and the station to ensure that the controls
7 are in place and that the annual inspections and
8 records are provided to the regulatory agencies to
9 ensure that that water is not used for a potable
10 source.

11 Next, SWMU 15, the abandoned tank farm of
12 the former North Station, served as a primary fueling
13 location in the 1950s. Several tanks out there and
14 some pipelines where they had some leaks. Previous
15 investigations, again, many investigations identified
16 a fairly large area of petroleum-contaminated soils
17 and contaminated groundwater.

18 MR. SPADACCINI: Are those tanks still
19 there?

20 MR. REISCH: No, the tanks have been
21 removed.

22 MR. SPADACCINI: That's what I thought.

23 MR. REISCH: In fact, the pond, when we
24 excavated down to remove the soils for the
25 bioremediation project, if you look at the pond that's

1 still out there, you can see the concrete tank bottom
2 of one of the tanks.

3 MR. SPADACCINI: Okay.

4 MR. REISCH: Done quite a bit of
5 investigation at this site. One of the things, as I
6 mentioned, we had a -- one of the studies identified a
7 significant contamination of soils. The soils were
8 dug up and remediated via biological treatment and the
9 soils were subsequently used in Tarmac restoration
10 project on the station. So the excavated area from
11 the -- where the soils were is now a pond
12 approximately two acres in size and depth of about
13 seven feet. Actually, the pond is assisting in
14 remediating the groundwater, so that's something
15 helping out the groundwater's sake.

16 As I mentioned, components of the
17 investigations include a human health risk assessment,
18 which was completed in January of 2001. There is a
19 carcinogenic risk to future and -- current and future
20 industrial workers and future residential, if exposed
21 to the surface soils. And the primary risk drivers
22 are from pH compounds. Let me think -- poly --
23 polyaromatic hydrocarbon compounds, which will --
24 which are known to break down under appropriate
25 conditions through biological degradation.

1 There is also a noncarcinogenic risk to
2 future residents exposed to soil and groundwater and a
3 future construction worker exposed to groundwater.
4 And what the construction worker scenario is, if they,
5 say a telephone lineman is digging a new line and he
6 gets into the water table without precautions, there
7 is a potential for risk to him.

8 As I mentioned, the contaminants of
9 concern in the soil are the pH compounds, and the
10 contaminants of concern in the groundwater is
11 primarily benzene and some other pH's, but benzene is
12 the risk driver for the groundwater.

13 We also conducted ecological risk
14 assessment, which was completed in June, and, again,
15 based on the ecological risk assessment and risk
16 management decision, no further action is warranted
17 for the SWMU 15.

18 Remedial objectives are to prevent and
19 minimize direct contact of human and ecological
20 receptors with surface soil that may pose unacceptable
21 risks and to prevent unacceptable risks to potential
22 human receptors of the groundwater.

23 MR. SPADACCINI: You had said that -- I
24 thought you said no further action. You may want to
25 change that unless --

1 MR. REISCH: You are right.

2 MR. SPADACCINI: -- I'm misreading it.

3 MR. REISCH: No, you are correct. Yes,
4 there is further action, I'm sorry, for -- to protect
5 ecological receptors from the pH and surface soil.
6 And I'm --- what I am thinking is the alternatives
7 that we have selected for human health also addresses
8 ecological.

9 What we have proposed at SWMU 15 for
10 groundwater is, basically, long-term monitoring. As I
11 mentioned, the pond has, basically, remediated or
12 cleaned up the groundwater in the immediate vicinity
13 of the pond and the slug of contamination is moving
14 away from the pond and continues to move into the
15 station. If you look at the map, SWMU 15 is on the
16 far reaches of the station, and the groundwater
17 movement is in this direction. In considering in 30
18 years it's only moved 300 feet and we've had some
19 substantial degradation over that period of time, we
20 can be expected, in fact, in the studies we modeled,
21 with the dispersion that it's going to take.

22 One of the things in our models is we
23 only had a few data points to run the modeling,
24 calibrate the model, and I think I mentioned that when
25 we talked before. The annual monitoring data will be

1 used to recalibrate the model in five years, and with
2 that we'll have a much more accurate picture of what
3 that contamination is doing.

4 For the soil, what we are going to do is
5 we know that land farming will work, biological
6 degradation based on our experience with the
7 biological treatment of contaminated soils, so we are
8 going to use a similar method and, basically, till the
9 soils around the pond and introduce biological
10 microorganisms in the tilling so that that will break
11 down and aerate, break up the soil and allow the bugs
12 to degrade those compounds. The optimum time for
13 that is to occur next spring, probably, because, you
14 know, we want the warm days, long days, and some water
15 but not too much, too much water -- wet weather.

16 Last SWMU in this group is SWMU 24, which
17 is in the Seabee compound where we have an oil bowser
18 where we stored waste oil that contained or had a
19 potential to contain degreasing compounds in the oil.
20 In the placement of the waste oil into the bowser,
21 it's likely that some of it was spilled. They had
22 soil staining on the ground, which created
23 contaminated soil and, also, some groundwater
24 contamination at the site.

25 Again, we had several investigations to

1 delineate the nature and extent of the contaminated
2 soils and the groundwater. The soils were dug up and
3 removed -- the contaminated soils were dug up and
4 removed in 1995. In 1996 we implemented a pilot study
5 using the NoVOCs in-well aeration system which pumps
6 air into the aquifer and creates a cyclonic movement
7 of the air through the aquifer, and we found
8 significant degradation of our chlorinated compound.

9 MR. SPADACCINI: Was that '96 or '97? I
10 thought you said '96.

11 MR. REISCH: It was '97. I was looking
12 at the wrong thing. You have a good memory, Bob.

13 But, actually, that was very successful.
14 The contaminant of concern in that study was
15 dichloroethene, and our starting concentrations were
16 over a thousand parts per billion and our ending
17 concentrations were less than one. So we had
18 significant degradation.

19 And, again, we conducted a human health
20 risk assessment at the site. There is a future for
21 carcinogenic and noncarcinogenic risks for children
22 and adults should they ingest the groundwater under
23 residential scenario. And, again, the contaminants of
24 concern are dichloroethene, and there are some
25 inorganics being arsenic, iron, and manganese, which

1 are common inorganic compounds in the area. But the
2 driver is the dichloroethene.

3 Ecological risk assessment was conducted
4 in 1999; however, based on that the soils were
5 removed, and it is a groundwater plume that is not
6 impacting any surface water, there are no ecological
7 receptors, therefore, there is no further action
8 required from an ecological perspective.

9 Our objective for the remedial action is
10 to prevent unacceptable risk for potential human
11 exposure to the groundwater, and the preferred
12 alternative is land use -- or groundwater use
13 restrictions for the future child and res -- future
14 child and adult residential scenario.

15 Our next steps for all these SWMUs is to
16 complete the public period, the public comment period
17 in September, at which time we are drafting a decision
18 document to be signed by the U.S. Navy, documenting
19 that these alternatives, the selected alternatives
20 will be implemented and there are time frames
21 associated with upon signature that the actions have
22 to be implemented. And if there are any questions on
23 these.

24 The next -- as we were advertising two
25 proposed remedial action plans, next set of SWMUs are

1 SWMUs 11, 16, 16GC, 21, 22, and 26. And I would like
2 to read the preamble to that, also, and then we'll go
3 quickly through the Power Point slides.

4 The department -- the Department of Navy
5 has identified a preferred alternative to address
6 contaminated soil and groundwater at solid waste
7 management units 11, 16, 16GC, 21, 22, and 26 located
8 on Naval Air Station Oceana, Virginia Beach, Virginia.

9 The DO -- the Department of Navy's preferred
10 alternative is no remedial action at these six SWMUs.

11 And, again, the -- this presentation
12 addresses the proposed remedial action of no further
13 action for SWMUs 11, 16, 16GC, 21, 22, and 26.

14 The public comment period began August
15 13th, 2001 and will continue through September 12th,
16 2001. All public comments must be postmarked no later
17 than September 12th, 2001. All investigation
18 documents for these SWMUs are located in the
19 administrative record located at the Virginia Beach
20 Public Library.

21 The base map is the second slide, which
22 shows the relative proximity of the SWMUs to the air
23 station.

24 And SWMU 11 is a fire training center,
25 which was used for weekend firefighting practice, and

1 where waste oil, fuel, and hydraulic fuel were
2 initially poured onto the ground and ignited on an
3 abandoned runway. And later the station conducted --
4 constructed rings where these operations took place.

5 Reports indicate that these operations
6 occurred from the 1960s into the 1970s. The
7 investigations -- the site has been investigated
8 several times with one of the investigations
9 identifying the area for a removal action, which was
10 conducted in 1995.

11 Human health risk assessments were
12 conducted under the Phase I RCRA, and that's R-C-R-A,
13 facility investigation, which determined no further
14 action for human health. An ecological risk
15 assessment was completed in August of 2001, and based
16 on the previous investigations and risk assessments,
17 no further action is recommended for SWMU 11.

18 SWMU 16 is pesticide storage area located
19 adjacent to building 821 in the PWC compound. The
20 rinse water from pesticide mixing operations and
21 cleanout from applications were discharged directly
22 onto the ground outside of building 821. Activities
23 occurred between 1968 and 1982.

24 And the site has been investigated only
25 three times. The focus of the -- with the main

1 where waste oil, fuel, and hydraulic fuel were
2 initially poured onto the ground and ignited on an
3 abandoned runway. And later the station conducted --
4 constructed rings where these operations took place.

5 Reports indicate that these operations
6 occurred from the 1960s into the 1970s. The
7 investigations -- the site has been investigated
8 several times with one of the investigations
9 identifying the area for a removal action, which was
10 conducted in 1995.

11 Human health risk assessments were
12 conducted under the Phase I RCRA, and that's R-C-R-A,
13 facility investigation, which determined no further
14 action for human health. An ecological risk
15 assessment was completed in August of 2001, and based
16 on the previous investigations and risk assessments,
17 no further action is recommended for SWMU 11.

18 SWMU 16 is pesticide storage area located
19 adjacent to building 821 in the PWC compound. The
20 rinse water from pesticide mixing operations and
21 cleanout from applications were discharged directly
22 onto the ground outside of building 821. Activities
23 occurred between 1968 and 1982.

24 And the site has been investigated only
25 three times. The focus of the -- with the main

1 investigation being the Phase I RCRA facility
2 investigation, at which time a human health risk
3 assessment concluded that there was no further action
4 for human health. An ecological risk assessment was
5 completed in August of 2001. Based on the previous
6 investigation and risk assessments, no further actions
7 recommended for SWMU 16.

8 SWMU 16GC is a pesticide maintenance area
9 on the golf course. It was in operation since 1956.
10 Again, basically, residual pesticides and the cleanout
11 water from applications were poured outside the shack.
12 The rinse water flowed into a shallow drainage ditch
13 through a swale underneath the building. The site was
14 investigated several times with the primary
15 investigation being the Phase I RCRA facility
16 investigation, at which time the human health risk
17 assessment concluded that there was no further action
18 for human health.

19 An ecological risk assessment was
20 completed in August of 2001. Based on the previous
21 investigations and risk assessments, no further action
22 is recommended for SWMU 16GC.

23 SWMU 21 is the transformer storage yard
24 located near building 530 in the PWC parking compound.
25 Transformers were stored in the area as early as 1982.

1 Periodic inspections revealed that some transformers
2 were known to have leaked. The station had a
3 contractor on contract to inspect the transformer and
4 respond to any leaks as they were detected.

5 Previous investigations included the RCRA
6 Phase I facility and RCRA facility investigation and,
7 also, was included in a Phase III RCRA facility
8 investigation for some confirmatory sampling. Based
9 on the human health risk assessment that was conducted
10 in the RCRA Phase III facility investigation, no
11 further action was deemed warranted at that time for
12 human health. The ecological risk assessment was
13 conducted -- completed in August of 2001. Based on
14 previous investigations and risk assessments, no
15 further action is recommended for SWMU 21.

16 SWMU 22 is the construction debris
17 landfill. It is approximately half acre unlined
18 landfill discovered in 1986, where only surface
19 dumping is known to have occurred for inert metallic
20 objects such as appliances, furniture, and aircraft
21 parts. The objects were removed and the site was
22 restored under the NAS Oceana Natural Resource
23 Program. There have been no documented releases from
24 this site.

25 This site was only investigated twice,

1 with the major investigation being Phase I RCRA
2 facility investigation, at which time the human health
3 risk assessment concluded that there was no further
4 action warranted for risk to the human health. The
5 ecological risk assessment was completed in August of
6 2001. Based on the previous investigations and risk
7 assessments, no action is recommended for SWMU 22.

8 MR. SPADACCINI: Now, that's the one
9 that's across Potters Road, right?

10 MR. REISCH: Correct.

11 MR. SPADACCINI: Now, wasn't there --
12 they are farming that land, part of that, or maybe up
13 to that land?

14 MR. REISCH: They are farming, yeah, as
15 you are driving down -- well, Potters Road is here.
16 This is Oceana Boulevard.

17 MR. SPADACCINI: Okay.

18 MR. REISCH: Actually, I think you are
19 thinking of SWMU 25.

20 MR. SPADACCINI: Okay. Okay.

21 MR. REISCH: But up where they are doing
22 that new road construction, they are farming up in
23 here, but this is -- you know the big thing that looks
24 like a golf ball? It's back behind there.

25 MR. SPADACCINI: I was thinking of 25.

1 Okay.

2 MR. REISCH: SWMU 26 is the firefighting
3 training area at building 222, which is the station's
4 firefighting -- fire station.

5 MR. SPADACCINI: Fire station.

6 MR. REISCH: It consisted of a partially
7 buried drum, approximately three feet by four feet,
8 where they would put petroleum objects or
9 petroleum-soaked objects in the tank, and they would
10 be burned for fire extinguisher practice. The tank
11 was removed before 1990.

12 The -- this SWMU was investigated only
13 three times, including Phase I RCRA facility
14 investigation, and some confirmatory samplings in
15 Phase III RCRA facility investigation.

16 Based on the human health risk
17 assessments that were conducted in the Phase I and the
18 Phase III RCRA facility investigations, no further
19 action was recommended for human health. The
20 ecological risk assessment was completed in August of
21 2000. Based on the previous investigations and risk
22 assessments, no further action is recommended for SWMU
23 26.

24 And, again, the next steps for this --
25 for these sets of SWMUs is being that they are no

1 further action for these SWMUs is we are preparing --
2 at the conclusion of the public comment period, we are
3 preparing a no-further-action decision document, which
4 will be signed by the Navy and submitted to EPA and
5 DEQ for concurrence.

6 MR. SPADACCINI: Which SWMU was the one
7 over by the old CPO club?

8 MR. REISCH: That's SWMU 15.

9 MR. SPADACCINI: That's what I thought,
10 okay.

11 MR. REISCH: This is Bob Stroud, our EPA
12 RPM.

13 That is all I have got. I have got all
14 kinds of reports and documents if you have any other
15 questions, Bob, but --

16 MR. SPADACCINI: No.

17 MR. REISCH: We went through this about
18 four months ago, you know, when I gave you an update
19 where we were, where the program was, where we were
20 heading. This is a pretty major step. We're closing
21 out nine SWMUs, we have four SWMUs left that will
22 be -- to be closed out. We are hoping to close out
23 three more this calendar year, and those SWMUs being
24 the line shack SWMUs, those being 2B, 2C, and 2E.

25 MR. SPADACCINI: Line being flight line.

1 MR. REISCH: Flight line. We are nearing
2 completion of the human health risk assessments. The
3 feasibility study has been drafted. The ecological
4 risk assessment is complete, tying all that stuff
5 together, so we are looking for probably a public
6 comment period in November for those documents. And
7 then our goal is to have a decision document signed by
8 the close of this calendar year.

9 And then the last SWMU is SWMU 25, which
10 is the concrete pile off of Potter's Road where the
11 human health risk assessment is complete, and we have
12 not started the ecological risk assessment due to the
13 concrete pile, which will be recycled under station
14 initiative.

15 MR. BALLINGER: Right.

16 MR. REISCH: And once that is complete,
17 then I will conduct an ecological risk assessment and
18 we will close that site out as well.

19 MR. BALLINGER: It is a no-cost project.

20 MR. SPADACCINI: Right. You have to
21 recycle the concrete and you are going to check the
22 water. Isn't there water in that vicinity or --

23 MR. REISCH: There is that big pond --
24 there is a borrow pit there. We have sampled it
25 several times.

1 MR. BALLINGER: They are going to restore
2 a portion of that land right there, right?

3 MR. REISCH: What they want to do is that
4 concrete pile extends down into the borrow pit, and
5 they are going to take out all the concrete that is on
6 the land and go into the borrow pit and go down about
7 three feet and then put some sand in there, but they
8 want to keep a rocky layer and then create that layer
9 as a warm-water fishery, and the shallow part will be
10 the hatching area or whatever, the spawning, I guess.
11 And then the rest of the land portion of the site will
12 be upland grasses, natural, go back to natural
13 habitat.

14 MR. SPADACCINI: That will be -- what
15 they are doing is going to be -- what you-all are
16 doing is going to be ideal as far as what is done on
17 an old SWMU.

18 MR. BALLINGER: It is going to be nice
19 once we get rolling. It has been a long process in
20 getting the contract administered.

21 MR. REISCH: Are there any other
22 questions?

23 MR. SPADACCINI: No, just a comment, I
24 guess, from the community's side. You know, I think
25 the station has done an admirable job in bringing

1 these and doing the remediation at the point of
2 closing them out. That's it.

3 MR. REISCH: Thanks.

4 (The hearing was concluded at 7:40 p.m.)
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COMMONWEALTH OF VIRGINIA AT LARGE, to wit:

I, Tracy Lewis, a Notary Public for the Commonwealth of Virginia at Large, of qualification in the Circuit Court of the City of Virginia Beach, Virginia, and whose commission expires April 30, 2002, do hereby certify that the within statements were recorded in stenotype by me and reduced to typescript under my direction; and that the foregoing transcript constitutes a true, accurate, and complete transcript.

I further certify that I am not related to nor otherwise associated with any party to this proceeding, nor otherwise interested in the event thereof.

Given under my hand and notarial seal at Norfolk, Virginia, this 23rd day of August, 2001.

Tracy Lewis/mc

Tracy Lewis
Notary Public

-'-			17:23	7:14	10:19	10:23	Based [9]	2:12	close [3]	18:22	19:8
'96	[2]	10:9	10:10	12:11	17:24		4:21	14:5	14:20	19:18	
'97	[2]	10:9	10:11	agencies [1]	5:8		15:8	15:13	16:6	closed [1]	18:22
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