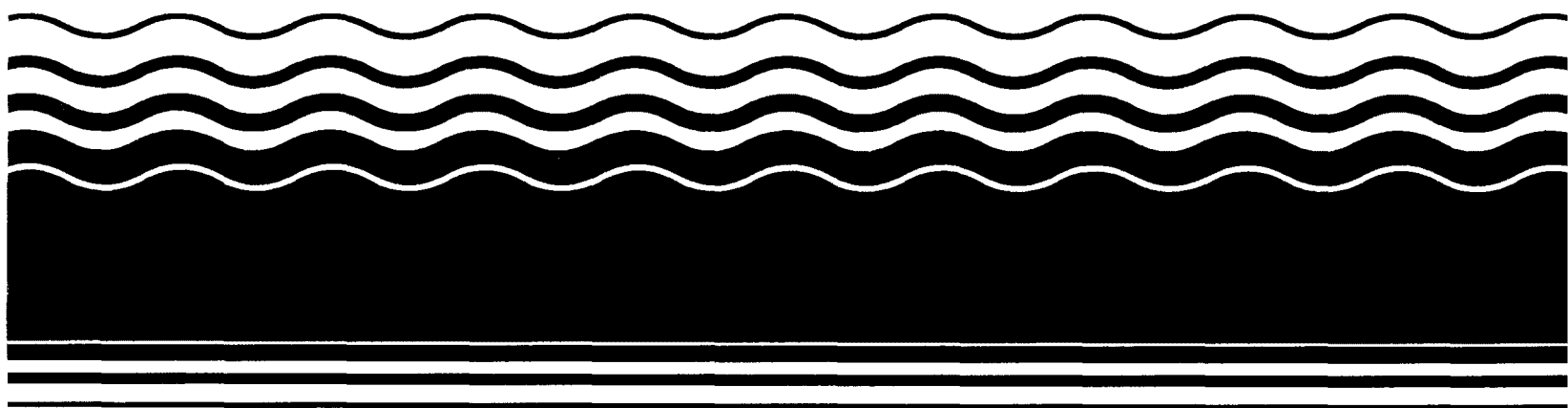


**PB96-964018
EPA/ROD/R04-96/275
November 1996**

**EPA Superfund
Record of Decision:**

**Cecil Field Naval Air Station,
Operable Unit 1, Jacksonville, FL
10/2/1995**





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

4WD-FFB

OCT 02 1995

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Captain Kirk T. Lewis
Commanding Officer, NAS Cecil Field
P.O. Box 108 (code 00)
Cecil Field, Florida 32215-0108

SUBJ: CECIL FIELD OU-1

Dear Captain Lewis:

The Environmental Protection Agency (EPA) has received and reviewed the final Record of Decision (ROD) for Operable Unit 1, also known as landfills 1 and 2. EPA concurs with the Navy's decision as set forth in the ROD dated September 26, 1995. This concurrence is with the understanding that the proposed action is intended to reduce risk to human health and the environment, and should additional work be required to achieve this risk reduction, the Navy is liable for this action if any is required.

It is EPA's understanding that the State has agreed orally to waive the relevant ARAR that would not otherwise be satisfied by the selected remedy. EPA agrees that a waiver of this ARAR is more protective of the environment than a remedy that would satisfy the ARAR.

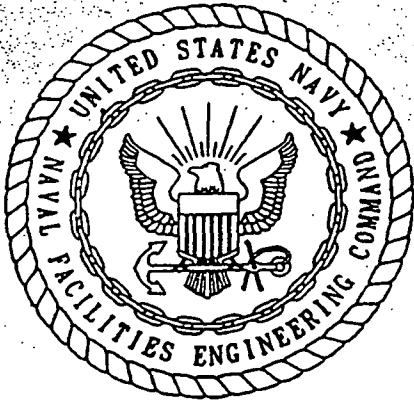
EPA appreciates the opportunity to work with the Navy on these sites and other sites at Cecil Field. Should you have any questions, or if EPA can be of any assistance, please contact Mr. Bart Reedy, of my staff, at the letterhead address or at (404)-347-3555 vnx 2049.

Sincerely,

A handwritten signature in cursive script, reading "Patrick M. Tobin".

Patrick M. Tobin, Deputy
Regional Administrator

cc: Mr. James Crane, FDEP
Mr. Eric Nuzie, FDEP
Mr. Michael Deliz, FDEP
Mr. Steve Wilson, SDIV

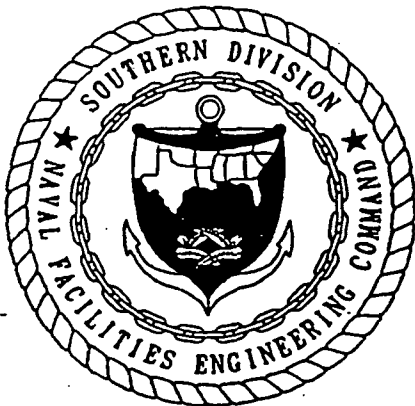


**RECORD OF DECISION
OPERABLE UNIT 1**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

**UNIT IDENTIFICATION CODE: N60207
CONTRACT NO.: N62467-89-D-0317/090**

SEPTEMBER 1995



**SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29419-9010**

**RECORD OF DECISION
OPERABLE UNIT 1**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

Unit Identification Code: N00207

Contract No. N62467-89-D-0317/090

Prepared by:

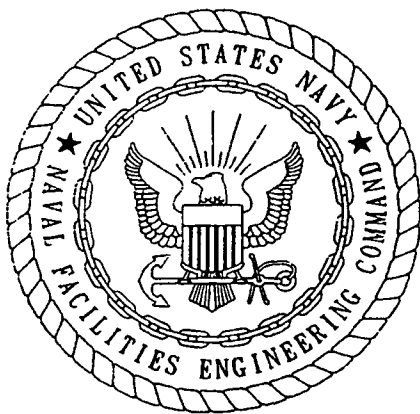
**ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301**

Prepared for:

**Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418**

Alan Shoultz, Code 1875, Engineer-in-Charge

September 1995



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/090 are complete and accurate and comply with all requirements of this contract

DATE: September 26, 1995

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao V. R. Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Andrew J. Lonergan, P.G.
Project Technical Lead

(DFAR 252.227-7036)

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Jacksonville, Florida

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ATTACHMENTS

Attachment A: Responsiveness Summary

Attachment B: Biomonitoring Program Outline, Operable Unit 1, Naval Air
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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CNO	Chief of Naval Operations
EIS	Environmental Impact Statement
FDEP	Florida Department of Environmental Protection (as of 7/93)
FDER	Florida Department of Environmental Regulation (before 7/93)
FS	Feasibility Study
FSWQ	Florida Surface Water Quality Standards
IAS	Initial Assessment Study
MCL	maximum contaminant level
msl	mean sea level
NACIP	Navy Assessment and Control of Installation Pollutants
NAS	Naval Air Station
NASCF	Naval Air Station Cecil Field
NCP	National Oil and Hazardous Substances Contingency Plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPL	National Priority List
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCBs	polychlorinated biphenyls
PRPs	potentially responsible parties
RA	Risk Assessment
RAB	Restoration Adversary Board
RAOs	remedial action objectives
RFI	Resource Conservation and Recovery Act (RCRA) Facility Investigation
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
RR	risk-reduction
SARA	Superfund Amendments and Reauthorization Act
SC	source control
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list

GLOSSARY (Continued)

USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
VOC	volatile organic compound

1.0 DECLARATION FOR THE RECORD OF DECISION

1.1 SITE NAME AND LOCATION. Operable Unit (OU) 1 is located at Naval Air Station (NAS) Cecil Field in Jacksonville, Florida. OU 1 consists of Site 1, the Old Landfill, and Site 2, the Recent Landfill. These sites are grouped as OU 1 because of their close proximity to each other and similarity of wastes and disposal practices.

1.2 STATEMENT OF BASIS AND PURPOSE. This Record of Decision (ROD) presents the selected remedial action for OU 1, Sites 1 and 2, that was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan, (NCP, 40 Code of Federal Regulation, [CFR] 300). This decision is based on the administrative record for OU 1.

The U. S. Environmental Protection Agency (USEPA) and the State of Florida concur with the selected remedy. Attachment A presents the Responsiveness Summary.

1.3 ASSESSMENT OF THE SITE. The baseline Risk Assessment (RA) completed for OU 1 did not identify unacceptable human health risk for any media sampled. While public health and welfare are not affected by hazardous substances at OU 1, physical conditions at the OU (the presence of rusting surface debris) pose a health and safety risk. The RA identified suppression of the benthic macroinvertebrate community and toxicity of sediments to ecological receptors in the Site 2 tributary and Rowell Creek, immediately downgradient of the confluence of the Site 2 tributary and Rowell Creek. These effects may be the result either of inorganics detected in surface water and sediment samples from the tributary or the presence of an orange-red flocculent material (the source of which is assumed to be a spring at Site 2) in the tributary. The observed effects in Rowell Creek are quickly recovered downstream of the confluence with the Site 2 tributary and are not observed downstream of OU 1.

1.4 DESCRIPTION OF THE SELECTED REMEDY. Upon completing field investigations and the remedial investigation and feasibility study (RI/FS), remedial alternatives were developed for closing the landfills to comply with ARARs representing the source-control alternatives. Alternatives were also developed to reduce or eliminate environmental effects associated with physical and chemical conditions in the Site 2 tributary that may affect Rowell Creek, representing risk-reduction alternatives. Two alternatives have been selected for OU 1: a source-control alternative and a risk-reduction alternative.

1.4.1 Source Control The selected source-control alternative for the landfills is site closure; it includes:

- a landfill gas survey,
- an unexploded ordnance survey,
- a radiological survey,
- removal of surface debris (empty rusted drums and concrete),
- groundwater monitoring,

- developing and implementing a postclosure care plan (e.g., for maintenance and monitoring activities),
- institutional controls (e.g., deed restrictions), and
- 5-year site reviews.

It is estimated that this alternative would cost \$261,500 and would be implemented on an annual basis for 5 years. The purpose of this alternative is to close the landfill in accordance with State and Federal law, pick up existing surface debris, and monitor groundwater.

1.4.2 Risk Reduction The selected alternative for risk reduction is biomonitoring, which includes:

- chemical analysis of surface water and sediment,
- identifying bacteria in the drainage structure and the Site 2 tributary,
- sampling of benthic macroinvertebrates, and
- toxicity testing of sediments.

These monitoring activities would occur on Site 2 (i.e., the spring and the drainage structure), in the Site 2 tributary, and in Rowell Creek. The purpose of this alternative is to:

- identify the source of the observed impacts on the Site 2 tributary;
- identify the bacteria present in the Site 2 tributary;
- assess whether chemical, physical, and biological conditions improve in Site 2 tributary over the biomonitoring period; and
- determine whether the Site 2 tributary is affecting Rowell Creek.

It is estimated that this alternative would cost \$266,400 to implement, be initiated within one year of the signing of this ROD, and be completed before the first 5-year site review. Attachment B presents an outline of the biomonitoring program.

1.5 STATUTORY DETERMINATIONS. By implementing the source-control and risk-reduction alternatives outlined in this ROD, human health and the environment will be protected. The risk assessment completed for this OU did not identify any current or future risks to human health based on USEPA and Florida Department of Environmental Protection (FDEP) guidelines. A potential risk to ecological receptors was identified for surface water and sediment; however, the current system of wetlands, drainage structure, and Site 2 tributary may be serving as an effective remedial system and protecting the ecological system of Rowell Creek.

The selected alternative for source control is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective.

The selected alternative for risk reduction is protective of human health and would protect the environment of Rowell Creek. The suppression of the benthic macroinvertebrate community observed in the Site 2 tributary and a portion of Rowell Creek (immediately downstream of the Site 2 tributary-Rowell Creek confluence) would continue because the existing system of wetlands, drainage structure, and tributary may be the most effective means of addressing these

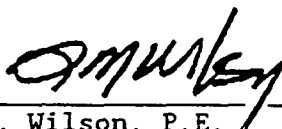
adverse effects. Additionally, the selected alternative does not result in habitat loss or wetland destruction, and is believed to protect the larger and more ecologically significant system of Rowell Creek.

Because the selected remedy does not impose a treatment component, Florida Surface Water Quality Standards, a chemical-specific applicable or relevant and appropriate requirement (ARAR) for surface water, would not be met for iron, lead, and nickel. An ARAR waiver is justified under CERCLA 121(d)(4)(B) because compliance with this requirement would result in greater risk to the environment. All other chemical-, location-, and action-specific ARARs would be attained by the selected remedy for risk reduction.

Treatment alternatives were not considered for source control or risk reduction because no human or ecological risks were identified at the site due to exposure to the landfill and because the current system of wetlands, drainage structure, and Site 2 tributary may be serving as an effective remedial system and protecting the ecological system of Rowell Creek.

Because these remedies will result in hazardous substances remaining onsite, a review will be conducted within 5 years after commencement of remedial action to evaluate whether the remedies continue to provide adequate protection of human health and the environment.

1.6 SIGNATURE AND SUPPORT AGENCY ACCEPTANCE OF THE REMEDY.



Stephen M. Wilson, P.E.
NAS Cecil Field Base Realignment and Closure
Environmental Coordinator

9/25/95
Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION. NAS Cecil Field is located 14 miles southwest of Jacksonville, Florida. The majority of Cecil Field is located within Duval County. The southern boundary of the facility extends into the northern portion of Clay County.

NAS Cecil Field was established in 1941 and provides facilities, services, and material support for the operation and maintenance of naval weapons, aircraft, and other units of the operating forces as designated by the Chief of Naval Operations. Some of the tasks required to accomplish this mission over past years included operation of fuel storage facilities, performance of aircraft maintenance, maintenance and operation of engine repair facilities and test cells for turbo-jet engines, and support of special weapons systems.

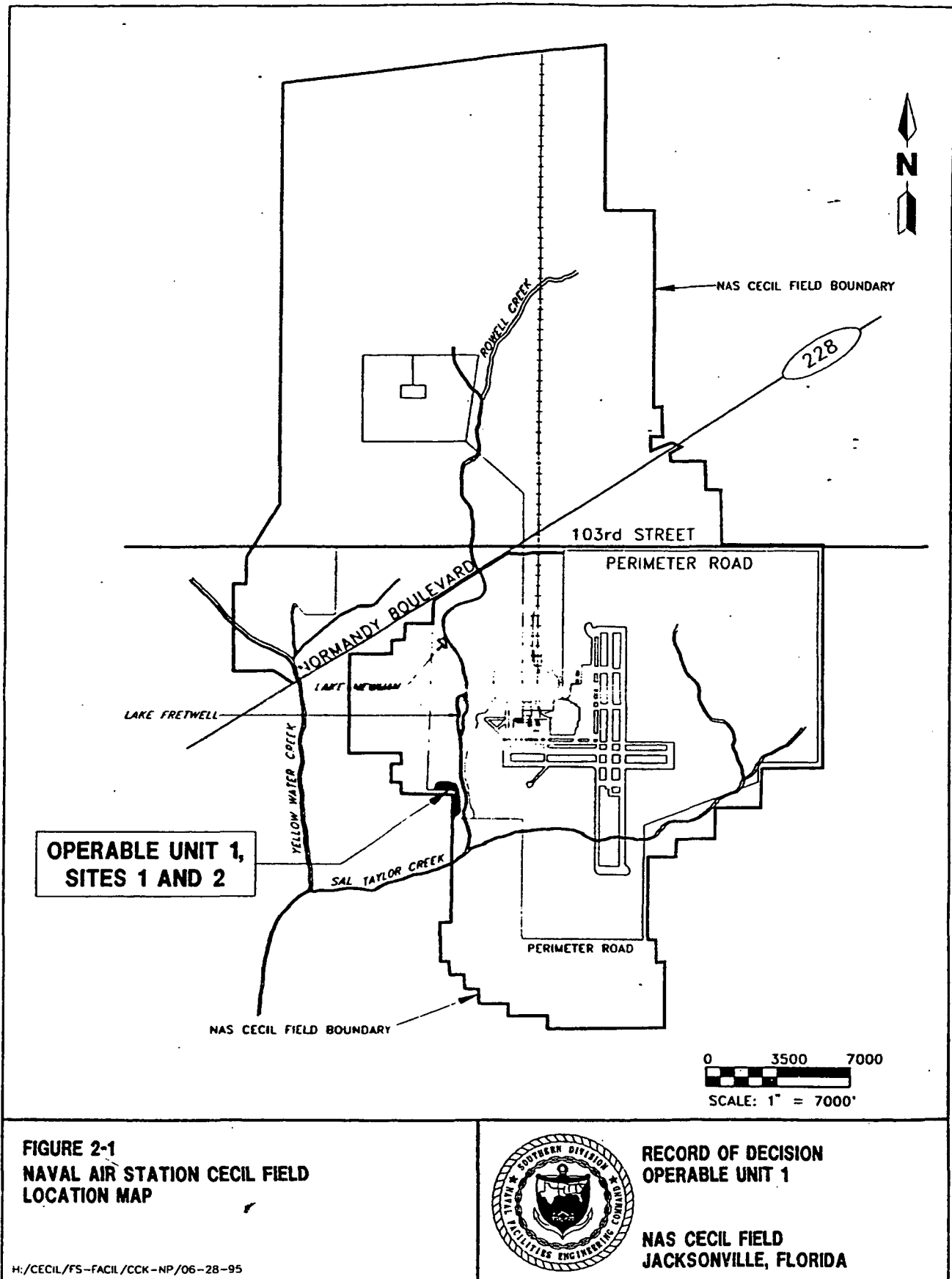
OU 1 consists of Site 1, the Old Landfill, and Site 2, the Recent Landfill. Figure 2-1 is a generalized map of NAS Cecil Field that shows the location of OU 1 in the southwestern portion of the facility. The nearest human population (base housing) is located approximately 6,000 feet to the northeast. A sketch of OU 1 showing the relative locations of Sites 1 and 2, surface water drainage between the two sites (the spring, the drainage structure, and the Site 2 tributary), and Rowell Creek is provided on Figure 2-2.

The vicinity of OU 1 is heavily vegetated. The majority of the 16 acres that comprise OU 1 are a wetland system consisting of palustrine scrub and shrub broad-leaved deciduous, palustrine forested broad-leaved deciduous, and palustrine emergent persistent (marshy) environments. Areas of OU 1 not mapped as wetlands (western edge of Site 1 and the central and western portion of Site 2) are either planted pine forest or grassy areas covered with scattered pines.

The highest elevations at OU 1 are located on the western side of Site 2, which is at approximately 70 feet above mean sea level (msl). The land slopes gently eastward to Rowell Creek at an elevation of approximately 50 feet above msl. Surface water drainage at OU 1 is generally to the east, via ditches and a small tributary, with all runoff eventually entering Rowell Creek. Groundwater flow in the upper surficial aquifer (immediately underlying the landfills) is to the east and discharges into Rowell Creek.

Three surface features at OU 1 are of interest. These are: (1) a berm which is breached in two places marking the eastern boundary of Site 1, (2) miscellaneous rusty debris throughout much of OU 1 but more frequently found on Site 1 along with concrete debris located in the southwest corner of Site 1, and (3) a spring and associated drainage located at the eastern boundary of Site 2. The earthen berm (4 to 6 feet high and 3 to 6 feet wide) causes water to pond behind some portions of the berm.

Figure 2-3 shows the spring, drainage structure, and Site 2 tributary. Drainage consists of an upper wetland (location of the spring), a water-filled ditch at the site (the drainage structure), a tributary to Rowell Creek (Site 2 tributary), and a lower wetland (into which the tributary drains prior to entering Rowell Creek).



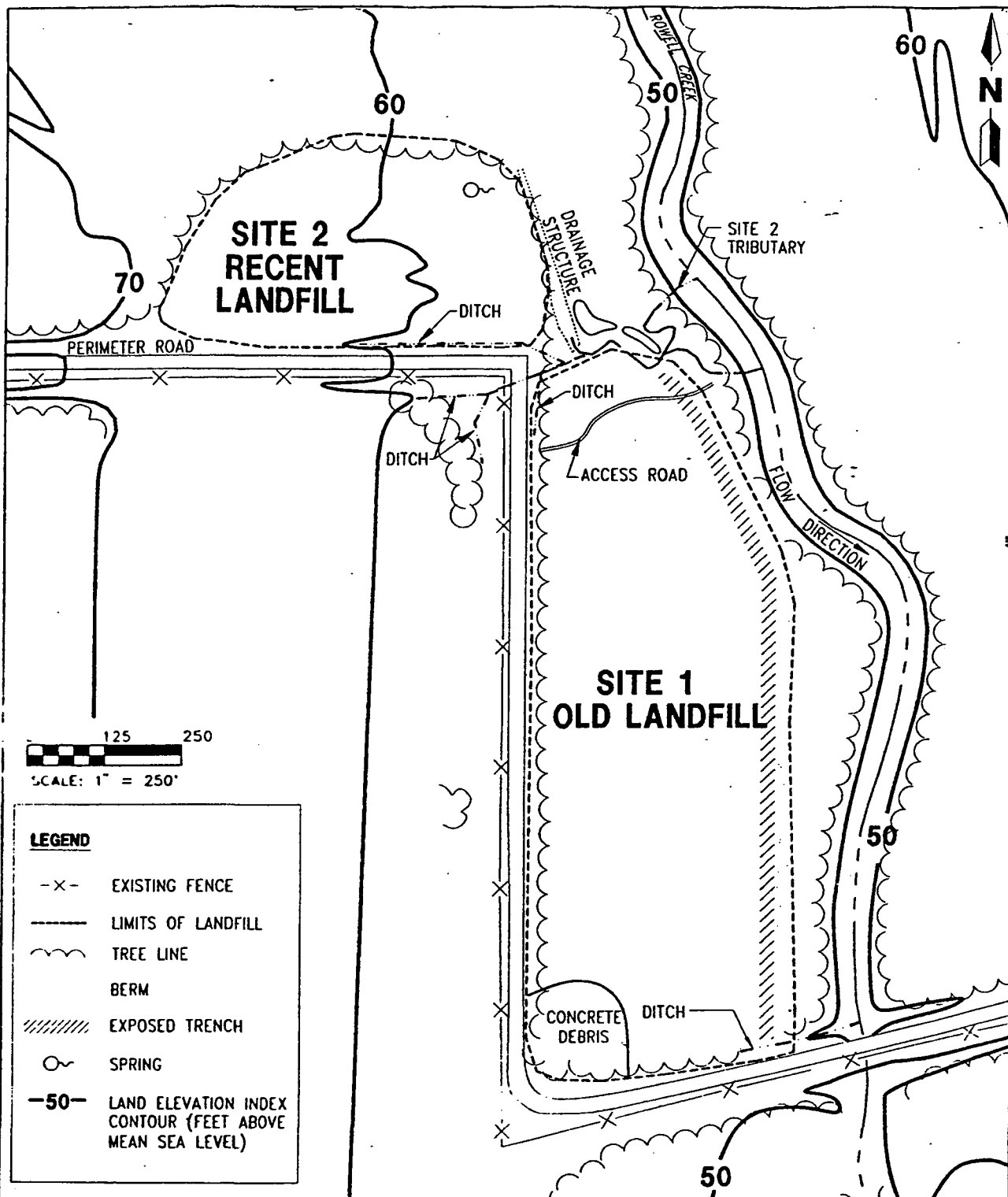


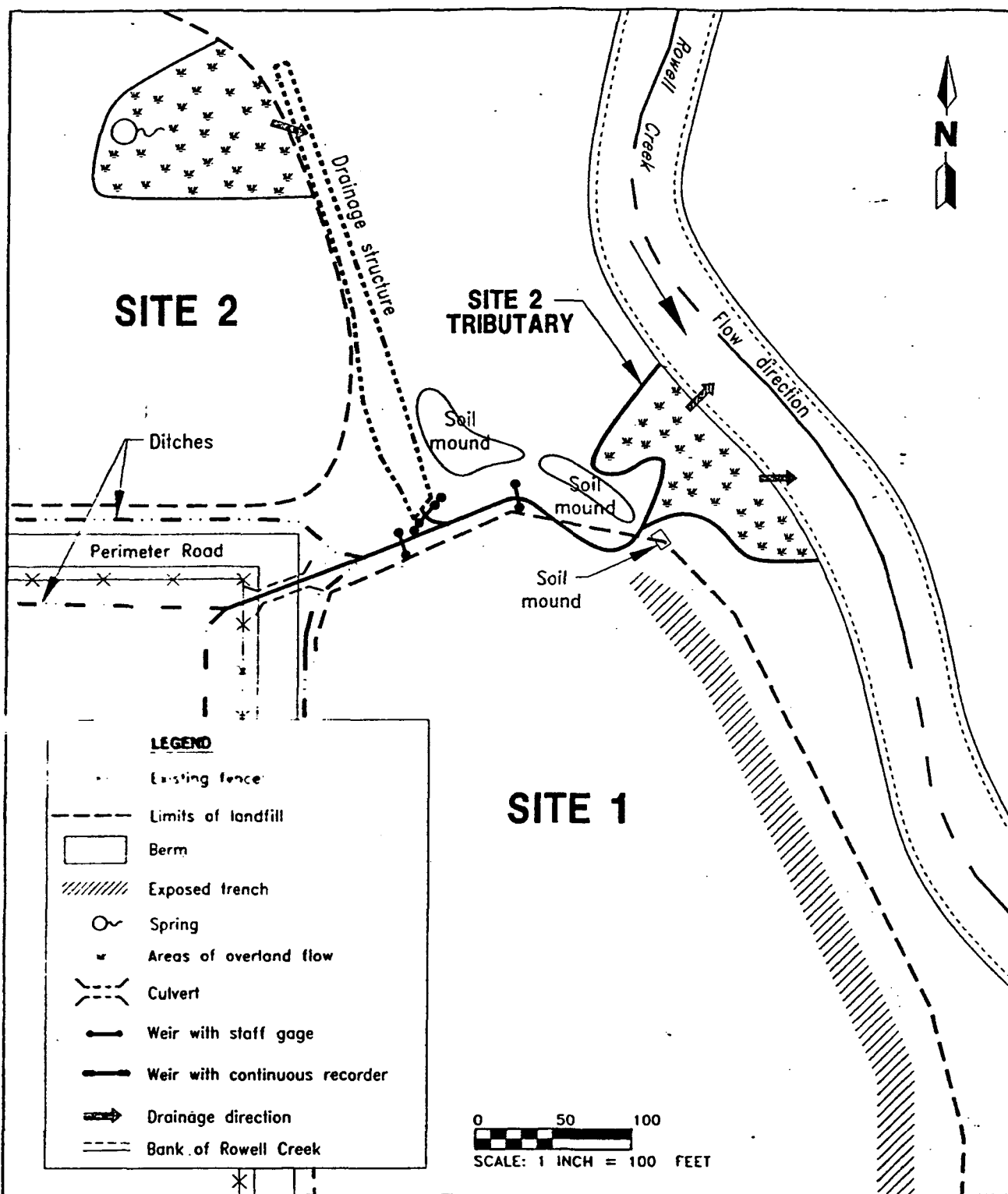
FIGURE 2-2
SURFACE FEATURES, SITES 1 AND 2



RECORD OF DECISION
OPERABLE UNIT 1

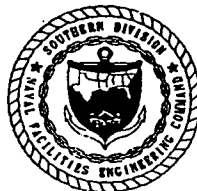
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

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**RECORD OF DECISION
OPERABLE UNIT 1**

**NAS CECIL FIELD
JACKSONVILLE, FLORIDA**

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES. The landfills and land at OU 1 are owned and operated by the Navy. Other potentially responsible parties (PRPs) have not been sought in connection with remedial response activities at OU 1, and there are currently no plans to identify other PRPs. No enforcement activities, removal actions, or remedial actions have occurred at OU 1.

NAS Cecil Field was placed on the National Priorities List (NPL) in 1989. A Federal Facilities Agreement was signed by the USEPA, FDEP (formerly Department of Environmental Regulation), and the Navy for NAS Cecil Field in 1990, and Sites 1 and 2 were designated as OU 1.

Site 1, the Old Landfill, operated as a trench-and-fill landfill from the mid-1950s until 1965, during which time it served as the only landfill for the facility. Trenches were excavated in a north-south direction to a depth at or below the water table. After a trench was filled, it was covered with the excavated soil. Detailed records of wastes placed in the landfill were not maintained. The majority of material placed in the landfill is believed to be solid waste from facility operations and the billeting of troops. Wastes were routinely burned at Site 1 according to historical reports. Site 1 was not lined and has a native soil cover.

Site 2, the Recent Landfill, operated as a trench-and-fill landfill from 1965 until 1975. Since 1975, waste removal services for NAS Cecil Field have been subcontracted with offbase disposal facilities. Trenches at Site 2 were placed in an east-west direction to a depth at or below the water table. Waste types at Site 2 are believed to be similar to those landfilled at Site 1. The spring on Site 2 is believed to have been caused by landfilling activities (Figure 2-3). The drainage structure was probably excavated to drain the area of the spring. Site 2 was not lined and has a native soil cover.

Investigation of the OU 1 landfills was initiated in 1984 by the Navy at the request of the State of Florida through Geraghty and Miller. One monitoring well was installed at the south end of Site 1. Metals in unfiltered groundwater samples were identified as a potential concern, and a 1-year monitoring program was completed.

An Initial Assessment Study (IAS) was completed in 1985 by Envirodyne Engineers, Inc., as part of the Naval Assessment and Control of Installation Pollutants program. This IAS (which was similar to a USEPA Preliminary Assessment and Site Investigation) recommended that the landfills at OU 1 be further characterized.

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was completed in 1988 by Harding Lawson and Associates. Monitoring well installation and the analysis of groundwater, surface water, and sediment were completed. Metals in unfiltered groundwater samples were identified as a potential concern. Additional characterization was recommended.

A Remedial Investigation and Feasibility Study (RI/FS) workplan was finalized in 1991 by ABB Environmental Services, Inc. (ABB-ES). The scope of the investigation was expanded in 1992 and the final field effort was initiated in the fall of 1993. The RI/FS report was finalized in December 1994 by ABB-ES. The Proposed Plan for OU 1 was finalized in April of 1995, and a 45-day public comment period was completed in June 1995.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION. The final Feasibility Study (FS) report was completed and released to the public in December 1994. The Proposed Plan, which summarizes the alternatives presented in the FS and presents a preferred remedial alternative, was completed in April 1995. Public notices of the availability of the FS and the Proposed Plan were placed in the Metro section of the *Florida Times Union* on April 30, 1995, and in the *Westside Edition* on April 22, 26, and 29, 1995.

The Proposed Plan was then presented to the NAS Cecil Field Restoration Advisory Board (RAB) (composed of 17 community members as well as 10 representatives from the Navy and State and Federal regulatory agencies) on April 13, 1995. A 45-day comment period soliciting public comment on the Proposed Plan was held from April 28 through June 15, 1995. A combined public meeting and availability session was held during the comment period (May 2, 1995) to present information on the proposed remedial alternatives and to solicit comments from the community. During the meeting, the RAB Community Co-Chair announced the support of the RAB for the Navy's preferred remedial alternatives.

As a result, no comments on the Proposed Plan were submitted at either the public meeting or during the public comment period. The FS and the Proposed Plan are still available to the public at the Information Repository, located at the Charles D. Webb Wesconnett Branch of the Jacksonville Public Library, located at 6887 103rd Street, Jacksonville, Florida.

2.4 SCOPE AND ROLE OF OPERABLE UNIT. The purpose of remedial action at OU 1 is to close the landfills to comply with ARARs (source control) and to reduce the risk of possible adverse effects to ecological receptors posed by physical and chemical conditions in the Site 2 tributary to Rowell Creek (risk reduction). To meet these goals, four remedial action objectives (RAOs) were identified. These objectives were based on an evaluation of site conditions, risks, and legal requirements (ARARs).

One RAO was identified for source control:

- complete closure of the landfills in accordance with State and Federal ARARs for landfill closure.

Three RAOs were identified for risk reduction:

- remove and prevent transport and accumulation of the orange-red flocculent material from the Site 2 tributary if biomonitoring shows the materials to be harmful to the benthic macroinvertebrate community of Rowell Creek;
- reduce unacceptable exposure of ecological receptors to metals (cyanide, nickel, cadmium, mercury, selenium, silver, and vanadium) in sediments; and
- reduce unacceptable aquatic receptor responses to iron, lead, and aluminum in the Site 2 tributary surface water.

2.5 SITE CHARACTERISTICS. The characteristics of OU 1 (contaminant sources, contaminant detections, contaminated media, and contaminant fate and transport) are fully discussed in the RI report for OU 1. The following paragraphs briefly highlight the findings of the RI, which is part of the administrative record.

Contaminant Sources The landfills are the only known sources of contamination present at OU 1. No other disposal sites are located upgradient of the OU 1 landfills with respect to groundwater flow and with respect to overland transport of contaminants via surface runoff. The location of OU 1 adjacent to Rowell Creek and near the convergence with Sal Taylor Creek places the landfills at the lower extreme of the Rowell Creek drainage basin and upgradient of OU 1. Several known and potential sites are located within the Rowell Creek drainage basin and upgradient of OU 1. These known and potential sites may act as a source of contamination to surface water and sediment in the portion of Rowell Creek immediately adjacent to and downstream of OU 1. These sites do not, however, affect the spring or drainage structure on Site 2 or the Site 2 tributary.

Surface Soil Semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and inorganics were detected in OU 1 surface soil samples. The only volatile organic compound (VOC) detected (acetone) is considered a common laboratory contaminant. Contaminant detections were random in their distribution, generally isolated in their occurrence, and below levels of concern to human health or the environment (see Summary of Site Risks, Section 2.6). The highest concentrations for most contaminants in soil were generally associated with the berm on the east side of Site 1.

Subsurface Soil Subsurface soil on the perimeter of the landfills was sampled at selected locations to verify the extent of waste placement. Only common laboratory contaminants and inorganics at concentrations consistent with background were observed in the laboratory analytical data for subsurface soil. Buried waste was not encountered at any of the perimeter locations.

Groundwater An extensive network of groundwater monitoring wells was installed and sampled to characterize both the vertical and horizontal extent of potential groundwater contamination associated with the OU 1 landfills. A plume of groundwater contamination was not detected at either landfill. Isolated detections of VOCs, SVOCs, and inorganics were reported in groundwater; no pesticides or PCBs were detected in groundwater. Concentrations of contaminants observed were generally well below maximum contaminant levels (MCLs) established by USEPA and FDEP for community potable water distribution systems, but some inorganic chemicals did exceed MCLs.

Recharge of groundwater at OU 1 comes from the infiltration of rainwater through the landfills and the wooded areas located to the west. All groundwater from OU 1 eventually discharges into Rowell Creek. Shallow groundwater from Site 2 discharges into the spring and drainage structure. Discharge from the drainage structure flows overland through the Site 2 tributary and a wetland to Rowell Creek; deeper groundwater from Site 2 discharges directly into Rowell Creek.

Surface Water and Sediment Surface water and sediment samples were collected from the drainage structure and Site 2 tributary located on OU 1 and from Rowell Creek located east of OU 1. Inorganics, PCBs, and common laboratory contaminants were the only constituents reported in surface water and sediment samples from Rowell Creek. PCB concentrations (reported in sediment only) were consistent with those

observed upstream of OU 1; statistical analysis of inorganics in both surface water and sediment indicated that samples adjacent to and downstream of OU 1 were not statistically different from those observed upstream of OU 1.

Analysis of surface water and sediment samples from the drainage structure and Site 2 tributary on OU 1 reported more organic contaminants and generally higher concentrations of inorganics than were observed in samples from Rowell Creek. Tables 2-1 and 2-2 present all reported detections from surface water and sediment sampling completed at OU 1. Samples with an "RC" in the locator were collected from Rowell Creek; all other samples were collected from the drainage structure and Site 2 tributary on OU 1. Figure 2-4 presents surface water and sediment sampling locations at OU 1.

An orange-red flocculent material is present in the upper wetland, the drainage structure, the Site 2 tributary, and the lower wetland (Figure 2-3). This flocculent is assumed to be formed by the combined effects of elevated iron concentrations present in the chemically reduced groundwater, gradual oxidation of the reduced iron upon contact with the atmosphere, and the presence and activity of iron-oxidizing bacteria. The presence of the flocculent material and iron-stained sediment is greatest in the drainage structure and decreases in intensity and occurrence in the downstream direction (toward lower wetland adjacent to Rowell Creek). The flocculent material has not been observed in Rowell Creek.

Data gathered during the remedial investigation indicated that the orange-red flocculent material may be suppressing the benthic community in the system. Additionally, toxicity testing of sediment from the Site 2 tributary and Rowell Creek at the tributary confluence reported reduced survival and reproductive rates for test organisms (when compared to control samples). These adverse effects are quickly recovered in Rowell Creek. A specific causative agent(s) of the impairment to the benthic community could not be identified; inorganics in surface water and sediment and the orange red-flocculent material were identified as possible causes for the reduced survival and reproductive rates observed.

2.6 SUMMARY OF SITE RISKS. The risk assessment completed for OU 1 did not identify any unacceptable human health risks for any media at the OU. A potential ecological risk, in the form of suppression of the benthic macroinvertebrate community, was identified for the Site 2 tributary and locations in Rowell Creek (RC-6 and RC-7, Figure 2-4), immediately downgradient of the confluence of the Site 2 tributary and Rowell Creek.

The potential impact to ecological receptors in the Site 2 tributary and a section of Rowell Creek was identified through laboratory observation of reproductive and mortality rates of benthic macroinvertebrates and sampling of the benthic community. The reproductive rates studied for the Site 2 tributary, RC-6, and RC-7 were less than normal. Sampling of the benthic community indicated impairment in the Site 2 tributary, RC-6, and RC-7. Additionally, increased mortality was observed at locations 2-2 and RC-7 (Figure 2-4). No suppression of the benthic macroinvertebrate community was reported at other locations sampled in Rowell Creek.

Table 2-1
Surface Water Chemical Analyses

Record of Decision
Naval Air Station Cecil Field, Operable Unit 1
Jacksonville, Florida

Locator:	2-SW1	2SW2	¹ SW-DUP1	2-SW3	RCSW6	RCSW7	RCSW8	RCSW8A	RCSW9	RCSW10
Collect Date:	24-Jun-93	22-Jun-93	22-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	28-Jun-93
Volatiles (µg/l)										
Acetone	--	--	--	--	--	--	--	--	--	9 J
Chloroform	--	--	--	--	--	--	--	--	1 J	1 J
Chlorobenzene	4 J	2 J	2 J	2 J	--	--	--	--	--	--
Semivolatiles (µg/l)										
1,4-Dichlorobenzene	2 J	--	--	--	--	--	--	--	--	--
Inorganics (µg/l)										
Aluminum	91.9	463	510	36.8	124	601	93.2	153	91.5	--
Barium	39.3 J	45.2 J	47.5 J	37.9 J	16.8 J	20 J	14.7 J	16.8 J	14.4 J	--
Calcium	17,500	19,200	19,300	19,700	25,100	24,900	25,300	25,000	25,900	24,000
Chromium	--	--	--	--	--	4 J	--	--	--	--
Iron	8,990	27,500	36,300	6,430	738	1,130	653	785	587	523
Lead	--	3.3	3.3	--	--	--	--	--	--	--
Magnesium	1,610 J	1,550 J	1,540 J	1,620 J	8,390	8,230	8,550	8,390	8,860	7,530
Manganese	106	103	105	101	16.8	21.2	17.8	19.2	16.2	15.3
Nickel	--	12.8 J	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	4,240 J	4,320 J	4,350	4,550	4,620	3,300 J
Sodium	4,260 J	3,920 J	3,990 J	4,250 J	23,100	22,500	24,100	23,300	25,400	18,400
Zinc	--	15.4 J	18.1 J	--	15.4 J	24.7	17.1 J	17.5 J	22.7	--

¹ Duplicate of sample 2SW2.

Notes: The complete analytical data set for OU 1 is presented in Appendix M of the Remedial Investigation (RI).

µg/l = micrograms per liter.

-- = not detected.

J = estimated value.

Table 2-2
Sediment Chemical Analyses

Record of Decision
Naval Air Station Cecil Field, Operable Unit 1
Jacksonville, Florida

Locator:	2-SD1	2SD2	¹ SD-DUP1	2-SD3	RCSD6	RCSD7	RCSD8	RCSD8A	RCSD9	RCSD10
Collect Date:	24-Jun-93	22-Jun-93	22-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	28-Jun-93
Volatiles (µg/kg)										
Methylene chloride	--	--	--	--	--	--	--	--	--	2 J
Acetone	410	190 J	170 J	220 J	--	16	44	14	39	--
2-Butanone	86 J	30 J	28 J	23 J	--	--	5 J	--	--	--
Toluene	--	--	--	6 J	--	--	--	--	--	--
Semivolatiles (µg/kg)										
Chlorobenzene	64 J	14 J	12 J	160 J	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	140 J	--	--	--	--	--	--
Acenaphthene	--	--	--	70 J	--	--	--	--	--	--
Fluoranthene	250 J	340 J	370 J	--	--	--	--	--	--	--
Pyrene	180 J	290 J	300 J	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	--	170 J	150 J	--
Aroclor-1260	--	--	--	--	--	--	21 J	29 J	20 J	36 J
Inorganics (mg/kg)										
Aluminum	2,280	2,310	3,220	8,180	515	470	699	670	586	542
Barium	32.5 J	61.7 J	110 J	25.9 J	3.8 J	3.9 J	6.3 J	5.3 J	5.2 J	5.7 J
Cadmium	3.5 J	--	6.2 J	1.3 J	--	1.5	--	--	--	--
Calcium	3,120 J	2,810 J	5,690 J	3,830	204 J	234 J	387 J	241 J	892 J	554 J
Chromium	--	--	--	13.1	--	--	--	--	--	--
Copper	--	3.9 J	5.5 J	--	--	--	--	--	8.5	1.6 J
Iron	37,000	124,000 J	233,000 J	7,320	405	368	524	308	400	308
Lead	9	9.3	--	22.4	1.8	2.3	2.3	1.2	4.5	2
Magnesium	--	175 J	--	138 J	--	--	--	--	172 J	70.6 J
Manganese	24.4	42.5	69.9	22.8	3.2 J	3 J	3.9 J	3.5 J	2.6 J	2.8 J
Mercury	--	0.39 J	1 J	--	--	--	--	--	--	--
Nickel	--	14.2 J	--	--	--	3.4 J	--	--	--	3.4 J
Potassium	--	--	--	--	--	--	122 J	--	--	--
Selenium	--	--	5.9 J	3.5	--	--	--	--	--	--
Silver	--	4.5 J	7.5 J	1.4 J	--	--	--	--	--	--
Vanadium	--	10.9 J	--	17.4 J	--	--	--	--	--	--
Zinc	38.2	73.4	94.9	34.5	7.8	7.1	8.9	5.6	9	5.5 J
Cyanide	--	1.7 J	--	.72 J	--	--	--	--	--	--

¹ Duplicate of sample 2SD2.

Notes: The complete analytical data set for OU 1 is presented in Appendix M of the Remedial Investigation (RI).

µg/kg = micrograms per kilogram.

-- = not detected.

J = estimated value.

mg/kg = milligrams per kilogram.

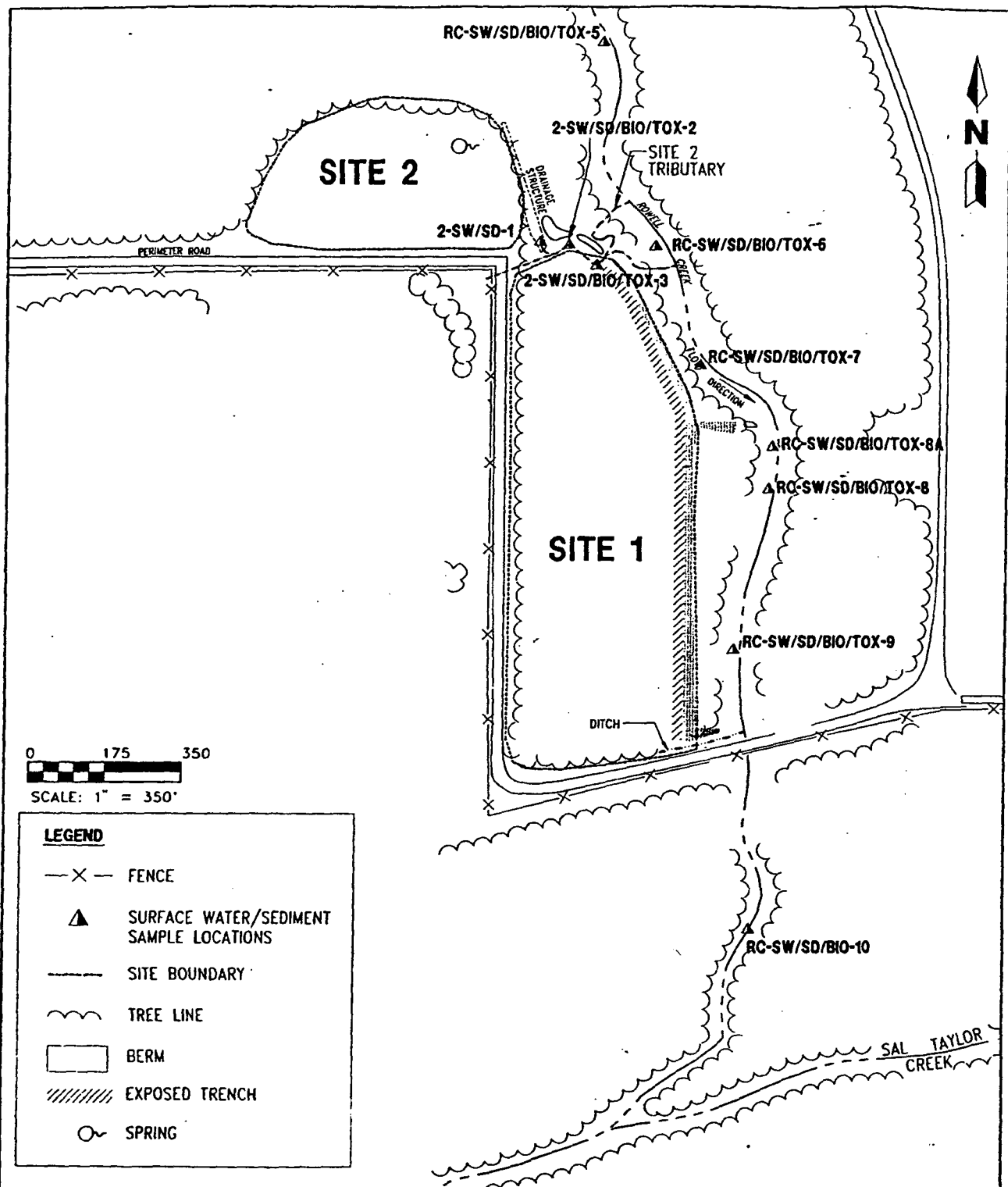


FIGURE 2-4
SURFACE WATER, SEDIMENT, AND
BIOLOGICAL SAMPLING LOCATIONS

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This decreased biological activity is thought to be attributable to an orange-red flocculent material observed in the tributary and/or inorganics in surface water and sediment.

- Suppression of the benthic macroinvertebrate community in the tributary may be the result of unfavorable physical conditions (gills may become coated with the orange-red flocculent material) rather than specific chemicals in surface water or sediment, but a conclusive statement regarding this issue could not be made.
- Chemical sampling and analysis have not identified a particular chemical responsible for the observed effects.
- No specific causes of the adverse effects (chemicals detected in surface water or sediment or physical conditions such as orange-red flocculent) could be identified.

2.7 DESCRIPTION OF ALTERNATIVES. This section and Table 2-3 present a summary of the source control and risk reduction alternatives developed to meet the remedial action objectives for OU 1. These alternatives are fully discussed in the FS, which is part of the administrative record for OU 1. Section 2.8 presents the comparative analysis of alternatives; Section 2.9 presents the selected source control and risk reduction alternatives.

Source Control

Three source-control (SC) alternatives were developed to meet the RAOs identified in Chapter 3.0. Institutional controls, including deed restrictions on the future use of land and groundwater at OU 1, are included in all three source-control alternatives. Also, because waste materials will be left in the landfills, all source-control alternatives must include a 5-year review to assess continued applicability of the selected remedy and whether human health and the environment continue to be protected by the remedy.

Alternative SC-1: No Action Evaluation of a no-action alternative is required by law. "No Action" means leaving the landfill as it is today. Institutional controls (e.g., deed restrictions) and a 5-year review are included in SC-1.

Alternative SC-2: Site Closure A site closure plan would be developed to complete a landfill gas survey, a radiological survey, and an unexploded ordnance (UXO) survey; remove surface debris (empty rusted drums and concrete); monitor groundwater; and perform postclosure care. Institutional controls and a 5-year review are included in SC-2.

Alternative SC-3: Site Closure and Capping A site closure plan would be developed to complete the following: (1) a landfill gas survey, (2) a radiological survey, (3) a UXO survey, (4) removal of surface debris (empty rusted drums and concrete), (5) a groundwater monitoring program, (6) clearing and grubbing (removal of trees and stumps), (7) design and construction of a landfill cap (Figure 2-5), (8) a landfill gas venting system, (9) management of surface water runoff, (10) wetland mitigation (replacing destroyed wetlands), and (11) an outline of postclosure care requirements (e.g., repair and maintain cap). Institutional controls and a 5-year review are included in SC-3.

Table 2-3
Remedial Alternatives for OU 1

Record of Decision
Naval Air Station Cecil Field, Operable Unit 1
Jacksonville, Florida

Alternative	Source Control			Risk Reduction		
	SC-1 No Action	SC-2 Site Closure	SC-3 Site Closure and Capping	RR-1 Biomonitoring	RR-2 Site Grading	RR-3 Treatment of Surface Water and Excavation of Sediment
Activities Common to All Alternatives	<ul style="list-style-type: none"> • Implement institutional controls • 5-year review 			<ul style="list-style-type: none"> • 5-year review 		
Additional Activities	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Develop closure plan • Perform unexploded ordnance, radiological, and landfill gas surveys • Remove and dispose of surface debris • Monitor groundwater • Fence landfill 	<ul style="list-style-type: none"> • Develop closure plan • Perform unexploded ordnance, radiological, and landfill gas surveys • Remove and dispose of surface debris • Monitor groundwater • Fence and cap landfill • Mitigate wetlands 	<ul style="list-style-type: none"> • Sample and analyze surface water and sediment • Sample benthic macroinvertebrates • Test toxicity of sediment • Identify bacteria present in surface water 	<ul style="list-style-type: none"> • Grade site to cover spring • Mitigate wetlands • Sample and analyze surface water and sediment • Sample benthic macroinvertebrates • Test toxicity of sediment • Identify bacteria present in surface water 	<ul style="list-style-type: none"> • Treat surface water • Excavate and dispose of sediment • Mitigate wetlands • Sample and analyze surface water and sediment • Sample benthic macroinvertebrates • Test toxicity of sediment • Identify bacteria present in surface water
Cost	\$36,700	\$261,500	\$4,550,600	\$266,400	\$645,400	\$1,951,100
Selected Alternatives		X		X		

Risk Reduction

Three risk-reduction (RR) alternatives have been developed to meet the RAOs discussed in Chapter 3.0. Because potential ecological risks were identified for surface water and sediment in the Site 2 tributary, a biomonitoring program is included in each of the risk reduction alternatives. The details of the biomonitoring program, however, would vary depending on which alternative is selected. The 5-year review (discussed above for source control) would include evaluation of the results of the biomonitoring program.

Alternative RR-1: Biomonitoring Biomonitoring has been included as an alternative because the current system of wetlands, drainage structure, and tributary may be serving as an effective remedial system and protecting the ecological system of Rowell Creek. The program outlined in Attachment B to this ROD would include chemical analyses of surface water and sediment, identification of the bacteria present in the drainage structure, sampling of benthic macroinvertebrates, and toxicity testing of sediment. Figure 2-6 presents RR-1.

Alternative RR-2: Site Grading Site grading would reduce risks by covering the affected area of Site 2. RR-2 consists of backfilling the spring, the drainage structure, and part of the Site 2 tributary; grading over these areas to the original topography; biomonitoring (as discussed in RR-1) focused on Rowell Creek, and adjacent wetlands; and wetland mitigation (replacing destroyed wetlands). Figure 2-7 presents RR-2.

Alternative RR-3: Treatment of Surface Water and Excavation of Sediment This alternative would reduce risks by removing existing sediment and treating surface water. RR-3 consists of treatability testing to develop an effective means of treating surface water; design and construction of the treatment facility; removing, dewatering, and disposing of existing sediment; operating and maintaining the treatment facility; biomonitoring (as discussed for RR-1) focused on the wetlands along Rowell Creek and Rowell Creek; and wetland mitigation. Figure 2-8 presents RR-3.

2.8 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES. This section evaluates and compares each of the source control and risk reduction alternatives with respect to nine criteria outlined in Section 300.430(e) of the NCP. Tables 2-4 and 2-5 summarize this comparison for seven of the nine criteria (threshold and primary balancing criteria) for source-control and risk-reduction alternatives, respectively.

The eighth and ninth criteria (State and community acceptance on the modifying criteria) have been evaluated. The State has reviewed all documents related to OU 1 (e.g., the RI, RA, FS, Proposed Plan, and this ROD) and concurs with the selected remedies. The State submitted one comment on the Proposed Plan during the public comment period. Attachment A of the ROD contains the Responsiveness Summary. The community has had the opportunity to comment on the proposed remedies during a 30-day public comment period (see Section 2.3). No comments were received from the community during the public comment period.

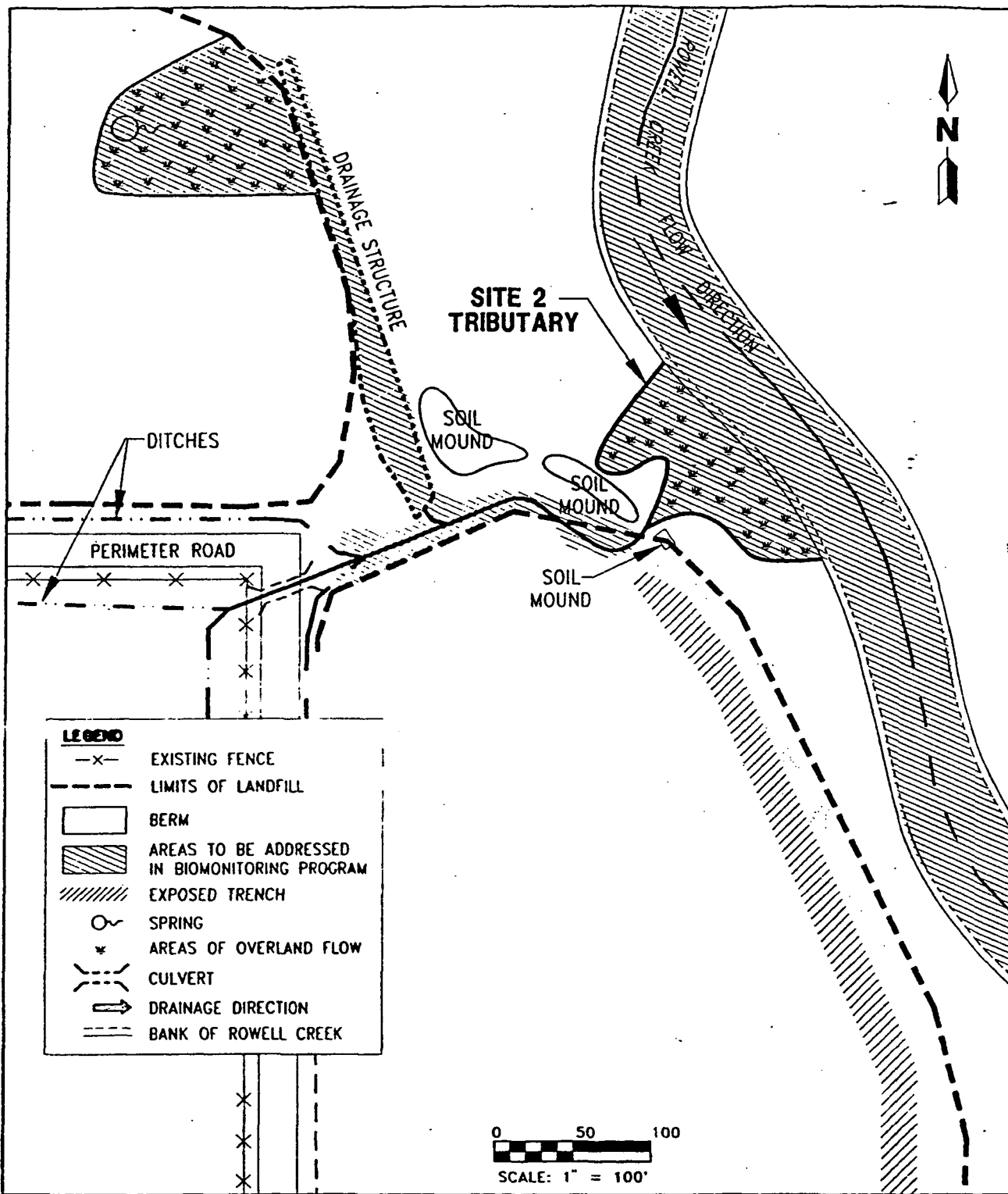


FIGURE 2-6
AREAS TO BE INCLUDED IN
BIOMONITORING PLAN, ALTERNATIVE RR1



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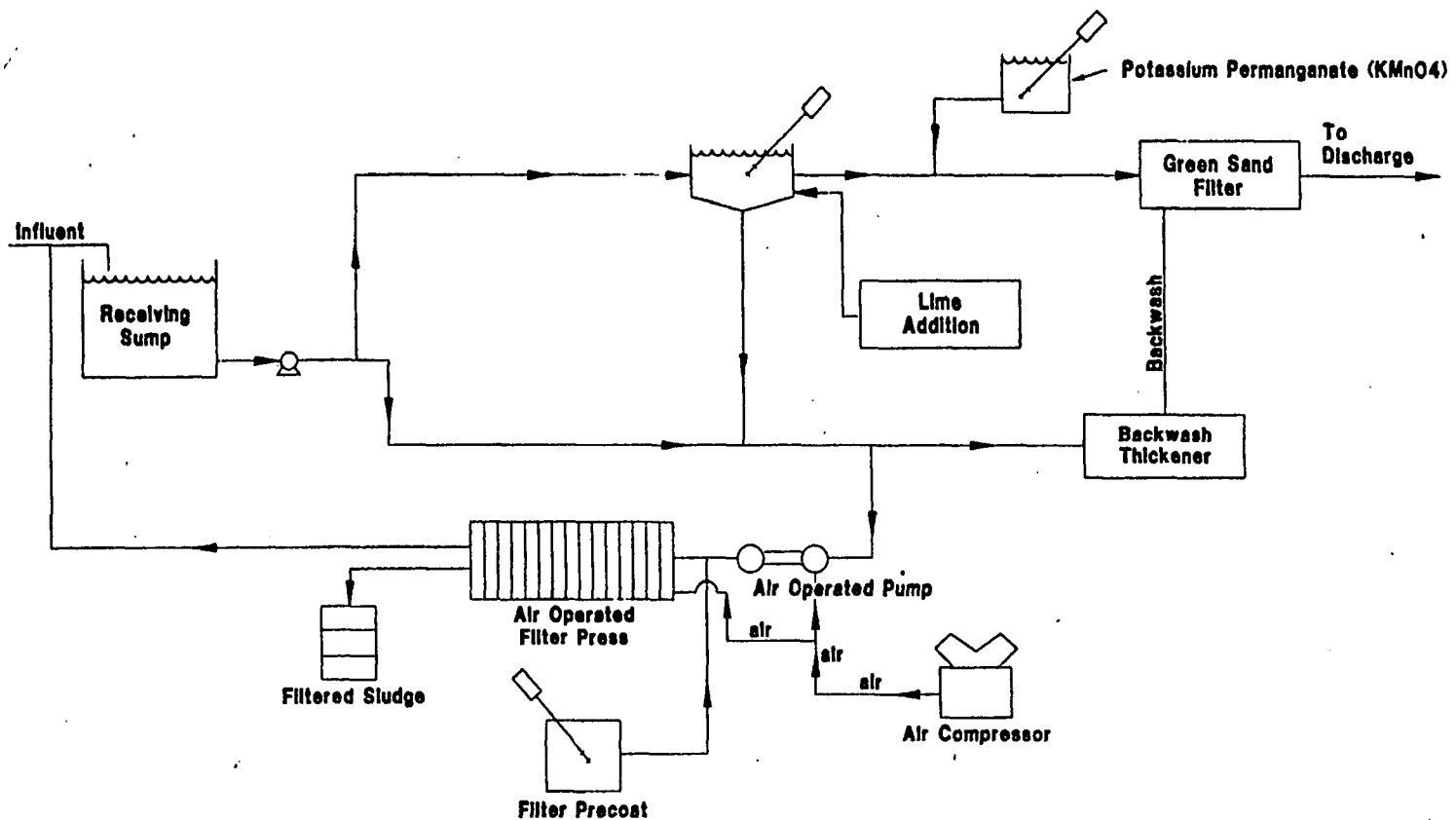


FIGURE 2-8
SURFACE WATER TREATMENT
PROCESS FLOW DIAGRAM FOR ALTERNATIVE
RISK REDUCTION 3, SURFACE WATER
TREATMENT AND EXCAVATION OF SEDIMENT



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Record of Decision
Naval Air Station Cecil Field, Operable Unit 1
Jacksonville, Florida

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Record of Decision
Naval Air Station Cecil Field, Operable Unit 1
Jacksonville, Florida

Alternative	Threshold Criteria		Primary Balancing Criteria				Cost
	Overall Protection	Compliance with ARARs	Long-term Effectiveness	Reduction in Toxicity, Mobility, and Volume	Short-term Effectiveness	Implementability	
RR-1: Monitoring	This alternative would protect human health and would protect the environment of Rowell Creek (see Section 2.9 of text). This alternative would not provide immediate additional aquatic organism protection in the spring, drainage structure, and Site 2 tributary. Biological conditions in Rowell Creek would be monitored for 5 years. There is no risk associated with human health.	This alternative would meet all chemical-specific ARARs for surface water except for three metals (iron, lead, and nickel) which exceed FSWQs. Location- and action-specific ARARs would be met.	Under this alternative, contaminant levels in surface water and sediment would be monitored for 5 years. Additional long-term action is dependent upon physical and chemical conditions at the 5-year review.	No treatment is employed in this alternative; therefore, there is no reduction in toxicity, mobility, or volume.	This alternative provides no remedial response action and, therefore, would not adversely impact the community or the environment during construction.	Abiomonitoring program would be easily implemented. This alternative would not interfere with the ability to perform future remedial actions.	\$266,400
RR-2: Site Grading	This alternative would eliminate aquatic habitat of the spring and drainage structure. There is no risk associated with human health.	This alternative would meet chemical- and action-specific ARARs. Location-specific ARARs pertaining to wetlands are not expected to be met.	Due to uncertainty in site hydrogeology, it is unknown if the groundwater spring will reoccur and, if so, what effect it will have on the benthic community at Site 2.	Containment rather than treatment is employed in this alternative. A reduction of surface water contamination toxicity, mobility, and volume is expected. Sediment will be covered and, therefore, will not reduce toxicity or volume.	This alternative is expected to have a significant impact on the environment at OU 1 because the wetland would be eliminated.	Site work proposed under this alternative is easily implemented. By filling in the drainage structure, this alternative may interfere with the ability to perform future remedial actions (e.g., RR-3).	\$645,300
RR-3: Treat Surface Water and Excavate Sediment	This alternative would be protective of the Site 2 tributary. However, this alternative may not be protective of the environment if the downgradient wetland system is altered by treating surface water and excavating sediment at the site. There is no risk associated with human health.	This alternative would meet all chemical-, location-, and action-specific ARARs.	This alternative is expected to remove contaminated sediment and treat surface water to address physical and chemical contamination present at the site.	This alternative would reduce the toxicity, mobility, and volume of the contaminants in surface water and sediment at OU 1.	No short-term impacts are anticipated.	Construction of treatment facility and associated site work is easily implemented. This alternative would not interfere with the ability to perform future remedial actions.	\$1,951,100

Notes: OU = Operable Unit.
ARARs = applicable or relevant and appropriate requirements.
SW = surface water.

FSWQs = Florida Surface Water Quality Standards.
SD = sediment.

2.9 SELECTED REMEDIES. Both a source-control and risk-reduction alternative were selected as the preferred remedy in the Proposed Plan.

The selected alternative for source control is SC-2, site closure. Alternative SC-2 provides an acceptable level of continued protection to human health and the environment. The alternative includes activities necessary to obtain closure of the landfills while preserving the habitat present. This alternative does not include intrusive methods that would expose landfill waste to site workers or destroy the wetland environment at the site. Alternative SC-2 meets all ARARs. The Navy estimates that the implementation of SC-2 will cost approximately \$261,500 and can be completed in approximately 5 weeks.

The selected alternative for risk reduction is RR-1, biomonitoring. The selected alternative for risk reduction is protective of human health and would protect the environment of Rowell Creek. The suppression of the benthic macroinvertebrate community observed in the Site 2 tributary and a portion of Rowell Creek (immediately downstream of the Site 2 tributary Rowell Creek confluence) would continue because the existing system of wetlands, drainage structure, and tributary may be the most effective means of addressing these adverse affects. Additionally, the selected alternative does not result in habitat loss or wetland destruction and is believed to protect the larger and more ecologically significant system of Rowell Creek.

Because the selected remedy does not impose a treatment component, the Florida Surface Water Quality Standards, a chemical-specific ARAR for surface water would not be met for iron, lead, and nickel. An ARAR waiver is justified in this case because compliance with this requirement would result in greater risk to the environment (as discussed in Section 2.8, Table 2-5 and Section 2.10). All other chemical-, location-, and action-specific ARARs would be attained by the selected remedy for risk reduction.

Risk-reduction alternatives RR-2 and RR-3 would result in significant habitat loss and destruction of wetland at OU 1 and are much more costly to implement. The effectiveness of RR-1 as it relates to achievement of ARARs will be evaluated at the 5-year review. The Navy estimates that the implementation of RR-1 would cost approximately \$266,400 and would be completed prior to the 5-year review for OU 1.

2.10 STATUTORY DETERMINATIONS. The remedial alternatives selected for OU 1 are consistent with CERCLA and the NCP. The selected remedies provide the best available methods for protection of human health and the environment, attain most ARARs (except Florida Surface Water Quality Standards [FSWQs] for iron, lead, and nickel), and are cost-effective. Tables 2-6 and 2-7 list and describe Federal and State ARARs appropriate for the selected source-control and risk-reduction remedies (respectively). Most importantly, the selected remedies provide flexibility to implement additional remedial measures, if necessary, to address RAOs or unforeseen issues.

As stated in Section 1.5, an ARAR waiver for noncompliance with the chemical-specific ARAR of Florida SWQS for iron, lead, and nickel is justified because compliance with this requirement would result in greater risk to the environment than alternative options.

Table 2-6
Synopsis of Federal and State ARARs for Alternative Source Control 2

Record of Decision, Operable Unit 1
Naval Air Station Cecil Field
Jacksonville, Florida

Federal and State Standards and Requirements	Requirements Synopsis	Consideration in the Remedial Response Process
<u>Chemical-Specific</u>		
Occupational Safety and Health Act (OSHA), Occupational Safety and Health Regulations [20 CFR Part 1910, Subpart Z]	Establishes permissible exposure limits for workplace exposure to a specific listing of chemicals.	Applicable. Standards are applicable for worker exposure to OSHA hazardous chemicals during remedial activities. During implementation of remedial alternatives for OU 1, these requirements are ARARs.
<u>Location-Specific</u>		
Endangered Species Act [50 CFR Part 402]	This act requires action to avoid jeopardizing the continued existence of federally listed endangered or threatened species. Requirements include notification to the USEPA and minimization of adverse effects to such endangered species because of planned activities.	Applicable. Table 4-3 lists the rare, endangered, and threatened flora and fauna at OU 1 at Naval Air Station (NAS) Cecil Field. Implementation of remedial alternatives at OU 1 could potentially impact one of the species identified in Table 4-3. Requirements of this rule must be met prior to implementation of any remedial alternative at OU 1.
National Environmental Policy Act (NEPA) [40 CFR Part 6]	This rule requires an Environmental Impact Statement (EIS) or a "functional equivalent" for Federal actions that may impact the human environment. It also requires that Federal agencies minimize the degradation, loss, or destruction of wetlands, and preserve and enhance natural and beneficial values of wetlands and floodplains under Executive Orders 11990 and 11988.	Applicable. A Federal action may be exempted from an EIS if a functionally equivalent study is performed under CERCLA. Wetlands have been identified and classified at OU 1 (see Chapter 1.0). If the implementation of any remedial alternative would impact these wetlands, the intent of NEPA (i.e., that degradation, loss, or destruction of wetlands should be minimized) requires consideration.
Protection of Wetlands, Executive Order 11990 [40 CFR Part 6]	Requires Federal agencies to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands if a practical alternative exists.	To be considered (TBC). Remedial alternatives selected for OU 1 that involve the alteration of the wetland systems identified at OU 1 may not be selected unless a determination is made that no practicable alternative exists. If no practicable alternative exists, potential harm must be minimized and action taken to restore and preserve the natural and beneficial values of the wetland.
Protection of Floodplains, Executive Order 11988	Federal agencies are required to reduce the risk of flood loss, to minimize impact of floods, and to restore and preserve the natural and beneficial values of floodplains.	To be considered. The potential effects of any action will be evaluated to ensure that the planning and decision making reflect consideration of flood hazards and floodplain management, including restoration and preservation of natural, undeveloped floodplains.
<u>Action-Specific</u>		
Department of Transportation Rules for Transportation of Hazardous Materials [49 CFR Parts 107, 171, 173, 178, and 179]	This regulation establishes the procedures for packaging, labeling, and transporting hazardous materials.	These requirements will be applicable to any company contracted to transport hazardous material from the site for laboratory analysis, treatment, or disposal.
See notes at end of table.		

Table 2-6 (Continued)
Synopsis of Federal and State ARARs for Alternative Source Control 2

Record of Decision, Operable Unit 1
Naval Air Station Cecil Field
Jacksonville, Florida

Federal and State Standards and Requirements	Requirements Synopsis	Consideration in the Remedial Response Process
Action-Specific (Continued)		
Hazardous Materials Transportation Act and Hazardous Materials Transportation Regulations [49 CFR Parts 171, 173, 178, and 179]	Provides requirements for packaging, labeling, manifesting, and transporting hazardous materials.	For remedial actions that involve offsite disposal of materials from OU 1, contaminated materials would need to be packaged, manifested, and transported to a licensed offsite disposal facility in compliance with these regulations.
Occupational Safety and Health Act (OSHA), General Industry Standards [29 CFR Part 1910]	Requires establishment of programs to ensure worker health and safety at hazardous waste sites, including employee training requirements.	Under 40 CFR 300.38, requirements apply to all response activities under the NCP. During the implementation of any remedial alternative at OU 1, these regulations must be attained.
Occupational Safety and Health Act (OSHA), Recordkeeping, Reporting, and Related Regulations [29 CFR Part 1904]	Provides recordkeeping and reporting requirements applicable to remedial activities.	These requirements apply to all site contractors and subcontractors and must be followed during all site work. During the implementation of any remedial alternative at the site, these regulations must be attained.
Occupational Safety and Health Act (OSHA), Safety and Health Standards, [29 CFR Part 1926]	Specifies the type of safety training, equipment, and procedures to be used during site investigation and remediation.	All phases of the remedial response project should be executed in compliance with this regulation. During the implementation of any remedial alternative at the site, these regulations must be attained.
Resource Conservation and Recovery Act (RCRA), Municipal Solid Waste Landfill Criteria [40 CFR Part 258]	This rule provides minimum national criteria for all solid waste landfills that receive municipal solid waste, accept nonhazardous municipal combustor ash, or codispose sewage sludge with municipal solid waste, and are not regulated under Subtitle C of RCRA.	The landfills that comprise OU 1 did not receive wastes after the effective date of RCRA Subtitle D, October 9, 1993; therefore, this requirement is not applicable. This requirement may, however, be relevant and appropriate for any alternative that involves the closure of the landfills.
RCRA, Closure and Post-Closure [40 CFR Subpart G, 264.110-264.120]	This regulation details general requirements for closure and post-closure of hazardous waste facilities, including implementation of a groundwater monitoring program.	The landfills that comprise OU 1 did not receive wastes after the effective date of RCRA Subtitle C, November 19, 1980; therefore, this requirement is not applicable. This requirement may, however, be relevant and appropriate for any alternative that involves the closure of the landfills.
RCRA, Landfills [40 CFR Part 264, Subpart N]	Provides requirements for design, operation, monitoring, inspection, recordkeeping, closure, and permit requirements for RCRA-regulated landfills.	The substantive requirements of this rule are potentially relevant and appropriate requirements for any remedial alternative that involves closure of the landfills of OU 1.
Chapter 17-4, FAC, Florida Rules on Permits	Establishes procedures for obtaining permits for sources of pollution.	The substantive permitting requirements must be met during a CERCLA remediation.
See notes at end of table.		

Table 2-6 (Continued)
Synopsis of Federal and State ARARs for Alternative Source Control

Record of Decision, Operable Unit 1
Naval Air Station Cecil Field
Jacksonville, Florida

Federal and State Standards and Requirements	Requirements Synopsis	Consideration in the Remedial Response Process
<u>Action-Specific (Continued)</u>		
Chapter 17-701, FAC, Florida Solid Waste Disposal Regulations	The rule implements the provisions of the Florida Resource Recovery and Management Act concerning the storage, collection, transportation, separation, processing, recycling, and disposal of solid waste.	The closure requirements described in Chapter 17-701.600, FAC, do not apply to landfills that received their final cover before July 1, 1985. Therefore, the landfills do not need to be closed in accordance with this regulation.
Chapter 17-730, FAC, Florida Hazardous Waste Rules	Adopts by reference appropriate sections of 40 CFR and establishes minor additions to these regulations concerning the generation, storage, treatment, transportation, and disposal of hazardous wastes.	The substantive requirements of this rule are potentially relevant and appropriate requirements for any remedial alternative that involves closure of the landfills at OU 1.
Chapter 17-736, FAC, Florida Rules on Hazardous Waste Warning Signs	Requires warning signs at NPL and FDEP identified hazardous waste sites to inform the public of the presence of potentially harmful conditions.	This requirement is applicable for sites that are on the NPL or that have been identified by the FDEP as potentially harmful.
<p>Notes: ARARs = applicable or relevant and appropriate requirements. CFR = Code of Federal Regulations. OU = Operable Unit. USEPA = U. S. Environmental Protection Agency. CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act. NCP = National Oil and Hazardous Substances Pollution Contingency Plan. FAC = Florida Administrative Code. NPL = National Priority List. FDEP = Florida Department of Environmental Protection.</p>		

Table 2-7
Synopsis of Federal and State ARARs for Alternative Risk Reduction

Record of Decision, Operable Unit 1
Naval Air Station Cecil Field
Jacksonville, Florida

Federal and State Standards and Requirements	Requirements Synopsis	Consideration in the Remedial Response Process
<p><u>Chemical-Specific</u></p> <p>Occupational Safety and Health Act (OSHA), Occupational Safety and Health Regulations [20 CFR Part 1910, Subpart Z]</p> <p>Chapter 17-302, Florida Administrative Code (FAC), Florida Surface Water Quality Standards (FSWQS)</p>	<p>Establishes permissible exposure limits for workplace exposure to a specific listing of chemicals.</p> <p>Defines surface water classes and establishes water quality standards for surface water within each classification. The State's antidegradation policy is also established in this rule.</p>	<p>Applicable. Standards are applicable for worker exposure to OSHA hazardous chemicals during remedial activities. During implementation of remedial alternatives for OU 1, these requirements are ARARs.</p> <p>Relevant and Appropriate. Surface water at OU 1 (i.g., Rowell Creed) is classified by the Florida Department of Environmental Protection (FDEP) as Class III water and as such is designated for recreation, propagation, and management of fish and wildlife and is not used as a drinking water resource. Remedial alternatives that address surface water contamination or include an option for discharge of treated groundwater or surface water to surface water will consider FSWQs. These standards may also be relevant and appropriate for groundwater remediation if no MCL exists, groundwater discharges to surface water and contaminants are affecting aquatic organisms, or other health-based standards are not available.</p>
<p><u>Location Specific</u></p> <p>Endangered Species Act [50 CFR Part 402]</p> <p>Fish and Wildlife Coordination Act [40 CFR Part 302]</p> <p>National Environmental Policy Act (NEPA) [40 CFR Part 6]</p>	<p>This act requires action to avoid jeopardizing the continued existence of federally listed endangered or threatened species. Requirements include notification to the USEPA and minimization of adverse effects to such endangered species because of planned activities.</p> <p>This rule requires that the U.S. Fish and Wildlife Services (USFWS), National Marine Fisheries Service (NMFS) and related State agencies be consulted when a Federal department or agency proposes or authorizes any control or structural modification of any stream or other water body. Also requires adequate provision for protection of fish and wildlife resources.</p> <p>This rule requires an Environmental Impact Statement (EIS) or a "functional equivalent" for Federal actions that may impact the human environment. It also requires that Federal agencies minimize the degradation, loss, or destruction of wetlands, and preserve and enhance natural and beneficial values of wetlands and floodplains under Executive Orders 11990 and 11988.</p>	<p>Applicable. Table 4-3 lists the rare, endangered, and threatened flora and fauna at OU 1 at Naval Air Station (NAS) Cecil Field. Implementation of remedial alternatives at OU 1 could potentially impact one of the species identified in Table 4-3. Requirements of this rule must be met prior to implementation of any remedial alternative at OU 1.</p> <p>Applicable. Should a remedial alternative involve the alteration of a stream or other body of water, the USFWS, NMFS, and other related agencies must be consulted before that body of water is altered. If alterations to the drainage structure or Site 2 tributary are necessary to implement remedial alternatives, the requirements of this rule would need to be met.</p> <p>Applicable. A Federal action may be exempted from an EIS if a functionally equivalent study is performed under CERCLA. Wetlands have been identified and classified at OU 1 (see Chapter 1.0). If the implementation of any remedial alternative would impact these wetlands, the intent of NEPA (i.e., that degradation, loss, or destruction of wetlands should be minimized) requires consideration.</p>
See notes at end of table.		

Table 2-7 (Continued)
Synopsis of Federal and State ARARs for Alternative Risk Reduction

Record of Decision, Operable Unit 1
Naval Air Station Cecil Field
Jacksonville, Florida

Federal and State Standards and Requirements	Requirements Synopsis	Consideration in the Remedial Response Process
Protection of Wetlands, Executive Order 11990 [40 CFR Part 6]	Requires Federal agencies to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands if a practical alternative exists.	To be considered (TBC). Remedial alternatives selected for OU 1 that involve the alteration of the wetland systems identified at OU 1 may not be selected unless a determination is made that no practicable alternative exists. If no practicable alternative exists, potential harm must be minimized and action taken to restore and preserve the natural and beneficial values of the wetland.
Protection of Floodplains, Executive Order 11988	Federal agencies are required to reduce the risk of flood loss, to minimize impact of floods, and to restore and preserve the natural and beneficial values of floodplains.	To be considered. The potential effects of any action will be evaluated to ensure that the planning and decision making reflect consideration of flood hazards and floodplain management, including restoration and preservation of natural, undeveloped floodplains.
<u>Action-Specific</u>		
Department of Transportation Rules for Transportation of Hazardous Materials [49 CFR Parts 107, 171, 173, 178, and 179]	This regulation establishes the procedures for packaging, labeling, and transporting of hazardous materials.	These requirements will be applicable to any company contracted to transport hazardous material from the site for laboratory analysis, treatment, or disposal.
Hazardous Materials Transportation Act and Hazardous Materials Transportation Regulations [49 CFR Parts 171, 173, 178, and 179]	Provides requirements for the packaging, labeling, manifesting, and transporting of hazardous materials.	For remedial actions that involve offsite disposal of materials from OU 1, contaminated materials would need to be packaged, manifested, and transported to a licensed offsite disposal facility in compliance with these regulations.
Occupational Safety and Health Act (OSHA), General Industry Standards [29 CFR Part 1910]	Requires establishment of programs to ensure worker health and safety at hazardous waste sites, including employee training requirements.	Under 40 CFR 300.38, requirements apply to all response activities under the NCP. During the implementation of any remedial alternative at OU 1, these regulations must be attained.
Occupational Safety and Health Act (OSHA), Recordkeeping, Reporting, and Related Regulations [29 CFR Part 1904]	Provides recordkeeping and reporting requirements applicable to remedial activities.	These requirements apply to all site contractors and subcontractors and must be followed during all site work. During the implementation of any remedial alternative at the site, these regulations must be attained.
Occupational Safety and Health Act (OSHA), Safety and Health Standards, [29 CFR Part 1926]	Specifies the type of safety training, equipment, and procedures to be used during site investigation and remediation.	All phases of the remedial response project should be executed in compliance with this regulation. During the implementation of any remedial alternative at the site, these regulations must be attained.
Chapter 17-4, FAC, Florida Rules on Permits	Establishes procedures for obtaining permits for sources of pollution.	The substantive permitting requirements must be met during a CERCLA remediation.
<p>Notes: ARARs = applicable or relevant and appropriate requirements. CFR = Code of Federal Regulations USEPA = U. S. Environmental Protection Agency.</p> <p>CERCLA = Comprehensive Environmental Response, Compensation and Liability Act. NCP = National Oil and Hazardous Substances Pollution Contingency Plan</p>		

Treatment alternatives were not considered for source control because no human or ecological risks from exposure to the landfill were identified at the site. Treatment alternatives were considered for risk reduction, but at this time, because the current system of wetlands, drainage structure, and Site 2 tributary may be serving as an effective remedial treatment system and protecting the ecological system of Rowell Creek, a treatment alternative was not selected.

2.11 DOCUMENTATION OF SIGNIFICANT CHANGES. The remedy discussed in this ROD has not changed significantly from that described in the Proposed Plan.

ATTACHMENT A
RESPONSIVENESS SUMMARY

Responsiveness Summary
Operable Unit 1, Sites 1 and 2
NAS Cecil Field, Jacksonville FL

The following is a response to the only comment received during the Public Comment Period. No comments were received during the Public Meeting.

Comment from Greg Brown, FDEP

I have reviewed the subject document dated April 1995 (received May 4, 1995). In my opinion, it is adequate for its intent. Based on the facts presented in this document, I concur with the proposed alternatives. If biomonitoring indicates an impact to the wetland and aquatic environments at the site, however, the Navy must be prepared to take mitigative actions. The proposed "risk reduction" alternative is therefore contingent upon future findings. The Navy should document its management decision strategies in the ROD and RD/RA planning documentation so that mitigative actions can be planned and implemented in a timely manner if necessary. For example, if biomonitoring indicates an impact, then RR-2 or RR-3 would be implemented using pre-defined decision criteria.

Response

The Navy agrees, a management decision strategy should be articulated in the ROD in the event the biomonitoring alternative indicates that more aggressive remedial measures are necessary. The Navy believes, however, that the decision strategy should not be limited to selecting which of the remaining alternatives (RR-2 or RR-3) would be implemented. More data, than are currently available, will be available for the 5-year review; the two remaining alternatives, upon review of those data, may not represent the best available technology for addressing environmental concerns at OU 1.

The management decision strategy objective is to prevent the impairment of Rowell Creek. To accomplish this objective, specific activities are outlined below:

- finalize the Remedial Design, including predefined decision criteria which would be used during the 5-year monitoring period as well as during the evaluation at the end of the period,
- complete the biomonitoring program,
- complete a critical review of the data generated relative to the pre-defined decision criteria,
- if decision criteria are not exceeded, either continue or discontinue the biomonitoring program based on the findings of the 5-year review, or
- if decision criteria are exceeded and additional remedial measures are needed, evaluate alternatives RR-2, RR-3 and other technologies (as appropriate), then select and implement an appropriate remedy.

The decision criteria will focus on impairment to Rowell Creek and will be based on ARARs and guidance criteria identified in the FS and the results of the biological monitoring.

The biomonitoring attachment to the Record of Decision established the testing and analyses to be completed, the frequency of data collection, and the general areas which should be monitored. The above management strategy will be added to the biomonitoring attachment. The testing and sampling locations for the biomonitoring program and decision criteria will be included in the Draft Remedial Design document.

ATTACHMENT B
BIOMONITORING PROGRAM OUTLINE

Attachment B.
Biomonitoring Program Outline
Operable Unit 1, NAS Cecil Field

The biomonitoring program, included as risk-reduction alternative RR-1, is presented in the Feasibility Study (FS) for NAS Cecil Field OU 1 and is part of the Administrative Record for OU 1. Slight modification of the program proposed in the FS, however, has been included in the following program outline, as suggested during the February 1995 Proposed Plan meeting with the Navy, USEPA, and the FDEP. The modifications are summarized below.

- Data collection will be quarterly for the first year and then annually for the remaining 4 years until the 5-year review. The FS proposed five annual sampling events.
- Analytical testing to accompany the biological testing will include target compound list volatiles, semivolatiles, pesticides, and polychlorinated biphenyls and target analyte list (TAL) metals and cyanide. The FS proposed testing for TAL only.
- Testing of the drainage structure and Site 2 tributary to identify the bacteria present and their role in the development of the orange flocculent will be completed.
- Testing of sediments for toxicity to two organisms, *Hyallela azteca* (an amphipod) and *Chironomus tentans* (insect larvae), will be completed. The FS proposed sediment toxicity testing with *Hyallela azteca* and *Ceriodaphnia dubia* (water flea). The benthic macroinvertebrate sampling program was not modified.
- Suggestions were made concerning modification of the sampling locations proposed in the FS. The selection of sampling locations will be finalized during remedial design for OU 1.

The objectives governing the selection of sampling locations, are presented below.

- Monitor all inputs to the Site 2 tributary. Inputs include the spring, the drainage structure, and the Site 2 tributary upstream (west) of the drainage structure.
- Monitor the Site 2 tributary and the lower wetland (located in the tributary adjacent to Rowell Creek).
- Monitor Rowell Creek upstream of its confluence with the Site 2 tributary, adjacent to the tributary, and downstream of the tributary.

The inclusion of a management decision strategy into this ROD was suggested during agency review of the Proposed Plan (Attachment A). The management decision strategy objective is to prevent the impairment of Rowell Creek. To accomplish this objective, specific activities are outlined below:

- finalize the Remedial Design, including predefined decision criteria which would be used during the 5-year monitoring period as well as during the evaluation at the end of the period,
- complete the biomonitoring program,
- complete a critical review of the data generated relative to the predefined decision criteria,
- if decision criteria are not exceeded, either continue or discontinue biomonitoring program based on the findings of the 5-year review, or
- if decision criteria are exceeded and additional remedial measures are needed, evaluate alternatives RR-2, RR-3 and other technologies (as appropriate), then select and implement an appropriate remedy.