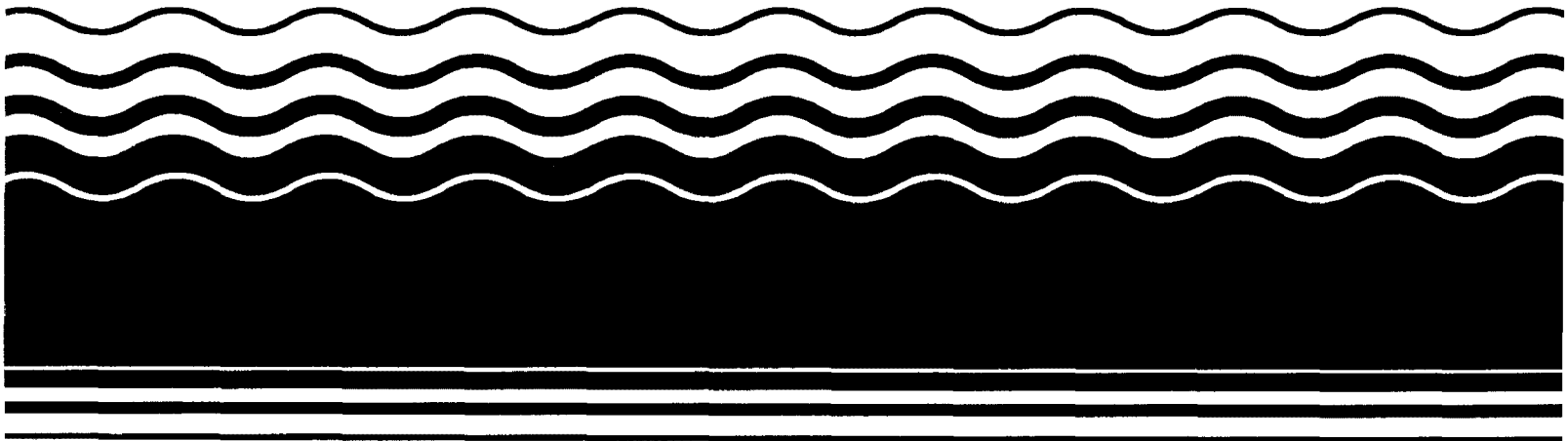


**PB97-963132
EPA/541/R-97/110
January 1998**

**EPA Superfund
Record of Decision Amendment:**

**Homestead AFB
Homestead AFB, FL
8/18/1997**



Homestead Air Force Base, Florida

Final

Record of Decision Amendment for Operable Unit No. 6, Site SS-3, Aircraft Washrack Area

March 1997

FINAL
RECORD OF DECISION AMENDMENT
FOR
OPERABLE UNIT 6, SITE SS-3,
AIRCRAFT WASHRACK AREA,
HOMESTEAD AIR FORCE BASE, FLORIDA

March 1997

Prepared for:

**U.S. Army Corps of Engineers
Missouri River Division
Omaha District
Omaha, Nebraska**

Prepared by:

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RECORD OF DECISION AMENDMENT

Operable Unit 6, Site SS-3,
Aircraft Washrack Area
(Former Site SP-7)
Homestead Air Force Base
Homestead, Florida
FDEP Facility No. 138521996

January 1997

Montgomery Watson appreciates the opportunity to work for the U.S. Army Corps of Engineers, at the Homestead Air Force Base facility in Homestead, Florida. If you have any questions or comments concerning this report, please contact Mr. Humberto Rivero, Homestead Air Force Base Site Manager.

Respectfully submitted,

MONTGOMERY WATSON



Jerry D. Gaccetta, P.G.

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TABLE OF CONTENTS

	<u>Page</u>
SECTION 1.0 - INTRODUCTION.....	1
1.1 Statement of Basis and Purpose.....	1
1.2 Public Participation	1
1.3 Site Location and Historical Description	2
1.3.1 Site Description	3
1.3.2 Past Site Usage.....	4
1.4 Regional Land Use	4
1.5 Surface Hydrology	5
1.6 Site Geology and Hydrogeology.....	5
1.7 Circumstances Leading to a ROD Amendment.....	6
1.7.1 Volume of Contaminated Soil	7
1.7.2 Volume of LNAPL	7
1.7.3 Possible Hazardous Characteristics of Excavated Soils.....	8
SECTION 2.0 - REASONS FOR ISSUING THE ROD AMENDMENT	8
2.1 Scope and Role of Response Action.....	8
2.2 Description of Alternatives.....	9
2.3 Remedy Selected in ROD	10
2.4 Rational for Alternative Remedy	11
SECTION 3.0 - DESCRIPTION OF AMENDED ALTERNATIVES.....	11
SECTION 4.0 - EVALUATION OF ALTERNATIVES	13
4.1 Summary of Comparative Analysis of Alternatives.....	13
4.1.1 Overall Protection of Human Health and Environment.....	13
4.1.2 Compliance with Federal/State Standards.....	14
4.1.3 Long-term Effectiveness and Permanence	14
4.1.4 Treatment to Reduce Toxicity, Mobility or Volume	14
4.1.5 Short-term Effectiveness.....	14
4.1.6 Implementability	15
4.1.7 Cost	15
4.1.8 State and Community Acceptance.....	15
4.2 Selected Amended Remedy	15
SECTION 5.0 - STATUTORY DETERMINATIONS	16

DECLARATION STATEMENT

FOR THE

RECORD OF DECISION AMENDMENT FOR OPERABLE UNIT NO. 6

HOMESTEAD AIR FORCE BASE SUPERFUND SITE

SITE NAME AND LOCATION

Homestead Air Force Base
Homestead, Dade County, Florida
Operable Unit No. 6, Site SS-3,
Aircraft Washrack Area (Former Site SP-7)

STATEMENT OF BASIS AND PURPOSE

This decision document presents the amended selected remedial action for the former Aircraft Washrack Area, Operable Unit No. 6 (OU-6), Site SS-3, at Homestead Air Force Base (AFB), in Homestead, Florida. This amended remedial action has been developed based on data generated during implementation of the original remedial action which alters the waste management of the excavated soil/bedrock from OU-6/Site SS-3. This ROD amendment has been prepared in accordance with CERCLA, as amended by SARA, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site.

The State of Florida, the U.S. Environmental Protection Agency (USEPA), and the U.S. Air Force (USAF) concur with the selected remedy presented in this Record of Decision (ROD) Amendment.

ASSESSMENT OF THE UNIT

As determined in previous studies of OU-6, the site poses a threat to human health and the environment because of the possible, but unlikely, ingestion of contaminated groundwater. The source of the groundwater contamination is suspected to be the light nonaqueous phase liquid (LNAPL) and the contaminated soil/rock. The purpose of this response is to eliminate the sources and allow the groundwater to naturally attenuate at an anticipated rapid pace. This alternative offers a permanent solution for the site.

DESCRIPTION OF THE AMENDED REMEDY

Operable Unit No. 6 represents the only unit at Homestead AFB to be addressed by this ROD Amendment. The originally selected remedy addresses the source of contaminated soil and groundwater (i.e., LNAPL) and the removal of the source. The amended remedy addresses revised waste volumes, revisions to the waste management approach, and revised costs associated with the above revisions. The localized contaminated groundwater is expected to naturally attenuate to within standards protective of human health and the environment after the removal of the contaminated soil and LNAPL.

The major components of the amended remedy include:

- Excavation of approximately 3,450 cubic yards of soil/rock to meet performance standards (2,100 cubic yards originally excavated plus an additional 1,350 cubic yards subsequently identified) and replacement with an equal volume of fill material. Off-site disposal of excavated soil at a RCRA Subtitle D landfill.
- Sending LNAPL to off-site disposal through energy recovery.
- Groundwater monitoring with five year site review until contaminants are at levels considered protective of human health and the environment.
- Disposal of water collected during excavation which meets standards required by the POTW. If the water does not meet performance standards, treatment will need to occur before disposal at a POTW

- Institutional controls to restrict the placement of potable wells in the contaminated groundwater near or beneath the site until such time as the benzene concentration in groundwater is less than ($<$) 1 $\mu\text{g/l}$. It is expected that this level will be achieved within 5-years.

STATUTORY DETERMINATIONS

The amended selected remedy 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. This remedy utilizes permanent solutions and alternative treatment and resource recovery technologies, to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because the remedy will result in hazardous substances remaining on-site above health-based levels (benzene in groundwater), a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment. The review will be performed every five years thereafter until protectiveness is achieved.

UNITED STATES AIR FORCE
HOMESTEAD AIR FORCE BASE

By: Albert F. Lowas, Jr.

ALBERT F. LOWAS, JR.
Acting Director

Date: 8/18/97

1.0 INTRODUCTION

Homestead Air Force Base
Homestead, Dade County, Florida
Operable Unit No. 6, Site SS-3,
Aircraft Washrack Area (Former Site SP-7)
Record of Decision Amendment

1.1 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) Amendment presents information regarding fundamental changes to the selected remedial action for the Aircraft Washrack Area, Operable Unit No. 6 (OU-6), Site SS-3, at Homestead Air Force Base (AFB), in Homestead, Florida. The remedial action for this site is being amended in order to modify the selected alternative based on new data obtained during the implementation of the remedial action. Changes from the original ROD include revision to the waste management approach, revised waste volumes, and revised cost associated with the proposed changes. Modification to the selected alternative are in accordance with CERCLA Section 117, as amended by SARA, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Section 300.435(c)(2)(ii).

The U.S. EPA has determined that the site specific information developed during implementation of the remedial action warrants reconsideration of the waste management approach. The State of Florida, the U.S. Environmental Protection Agency (USEPA), and the U.S. Air Force (USAF) concur with the amendments to the selected remedy presented in this Record of Decision (ROD) Amendment.

The ROD for this site was developed by Montgomery Watson in February 1995 and signed by the signatories of the Homestead AFB Federal Facility Agreement in April 1995.

1.2 PUBLIC PARTICIPATION

Public participation is encouraged by the Base. Information regarding the amended remedy was distributed to the individuals on the Homestead AFB mailing list in the form of the Proposed Plan Fact Sheet. Additionally, a public meeting was held on November 20, 1996 at 7:00 p.m. in the South Dade High School Auditorium. A public notice was published in the South Dade News Leader on November 6, 1996, Miami Herald November 7, 1996, and The Courier

November 8, 1996. At this meeting, the USAF, in coordination with USEPA Region 4, Florida Department of Environmental Protection (FDEP), and Dade County Environmental Resource Management (DERM) discussed the fundamental change to the ROD and the new preferred alternative described in the Proposed Plan. The public comment period was held from November 20, 1996 to December 20, 1996, as part of the community relations plan for OU-6. A response to the comments received during this period is included in the Responsiveness Summary, which is a part of this ROD.

The Administrative Record, which is a compilation of all the information developed for the amended remedy, is available for review at the Information Repository located at Homestead Air Force Base, Conversion /Agency Office. The OU-6 ROD Amendment will become part of the Administrative Record files (NCP Section 300.825 (a)(2)). To schedule a time to review the Administrative Record or to submit comments regarding the amended ROD, contact:

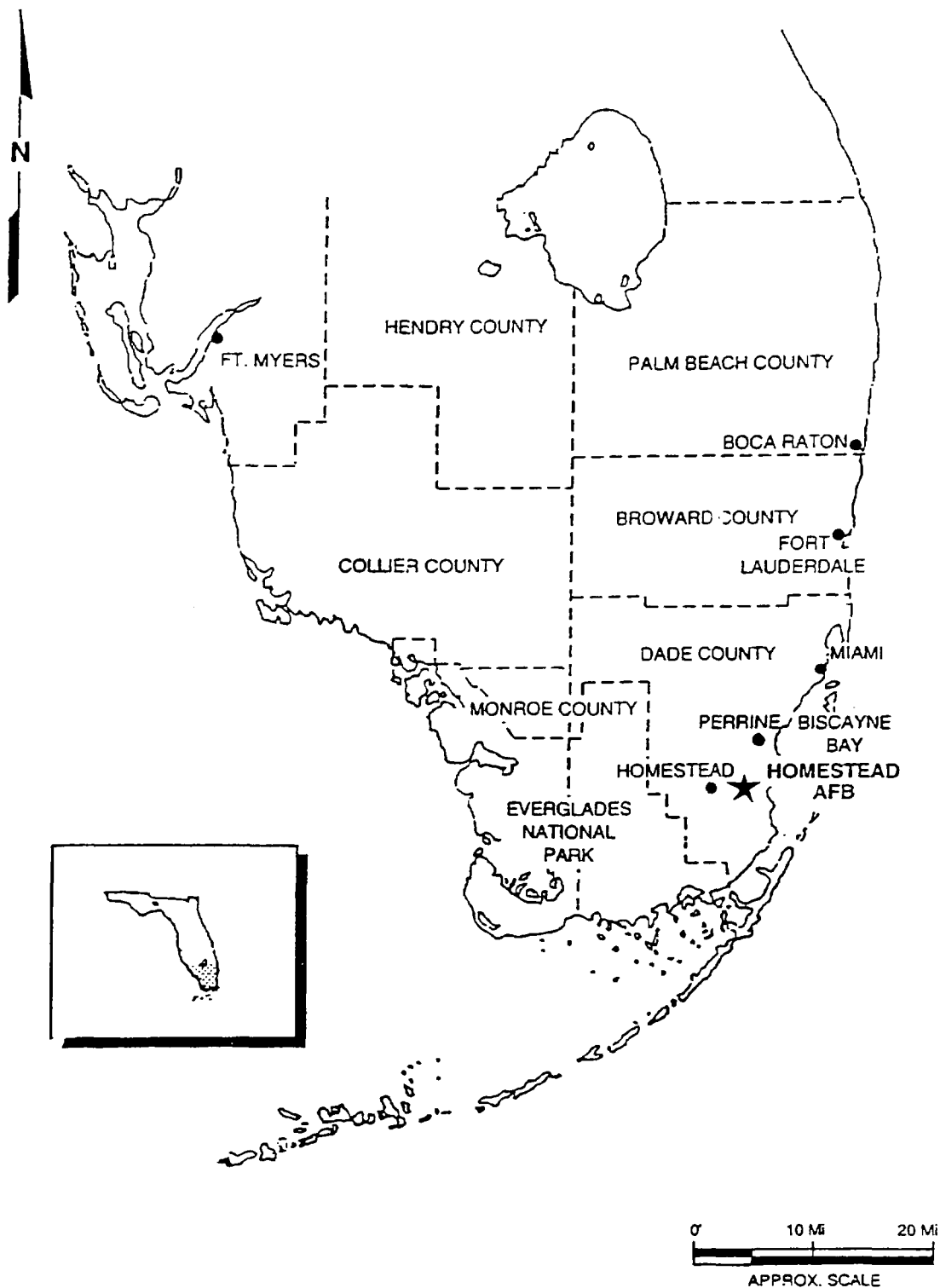
Mr. Humberto Rivero
Site Manager/BRAC Environmental Coordinator
Air Force Base Conversion Agency/OL-Y
29050 Coral Sea Blvd., Box 36
Homestead AFB, FL 33039-1299

Phone: (305) 224-7013
Fax: (305) 224-7-67

1.3 SITE LOCATION AND HISTORICAL DESCRIPTION

Homestead Air Force Base (AFB) is located approximately 25 miles southwest of Miami and 7 miles east of Homestead in Dade County, Florida (Figure 1-1). The main Installation covers approximately 2,916 acres while the areas surrounding the Base are semi-rural. The majority of the Base is surrounded by agricultural land. The land surface at Homestead AFB is relatively flat, with elevations ranging from approximately 5 to 10 feet above mean sea level (msl). The Base is surrounded by a canal that discharges to an Outfall Canal and ultimately into Biscayne Bay approximately 2 miles to the east.

The Biscayne Aquifer underlies the Base and is the sole source aquifer for potable water in Dade County. Within 3 miles of Homestead AFB over 4,000 area residents obtain drinking water from



HOMESTEAD AIR FORCE BASE
HOMESTEAD, FLORIDA

FIGURE 1-1

the Biscayne Aquifer, while 18,000 acres of farmland are irrigated from aquifer wells (USEPA, 1990). All recharge to the aquifer is through rainfall.

Homestead Army Air Field, a predecessor of Homestead Air Force Base, was activated in September 1942, when the Caribbean Wing Headquarters took over the air field previously used by Pan American Air Ferries, Inc. The airline had developed the site a few years earlier and used it primarily for pilot training. Prior to that time, the site was undeveloped. Initially operated as a staging facility, the field mission was changed in 1943 to training transport pilots and crews.

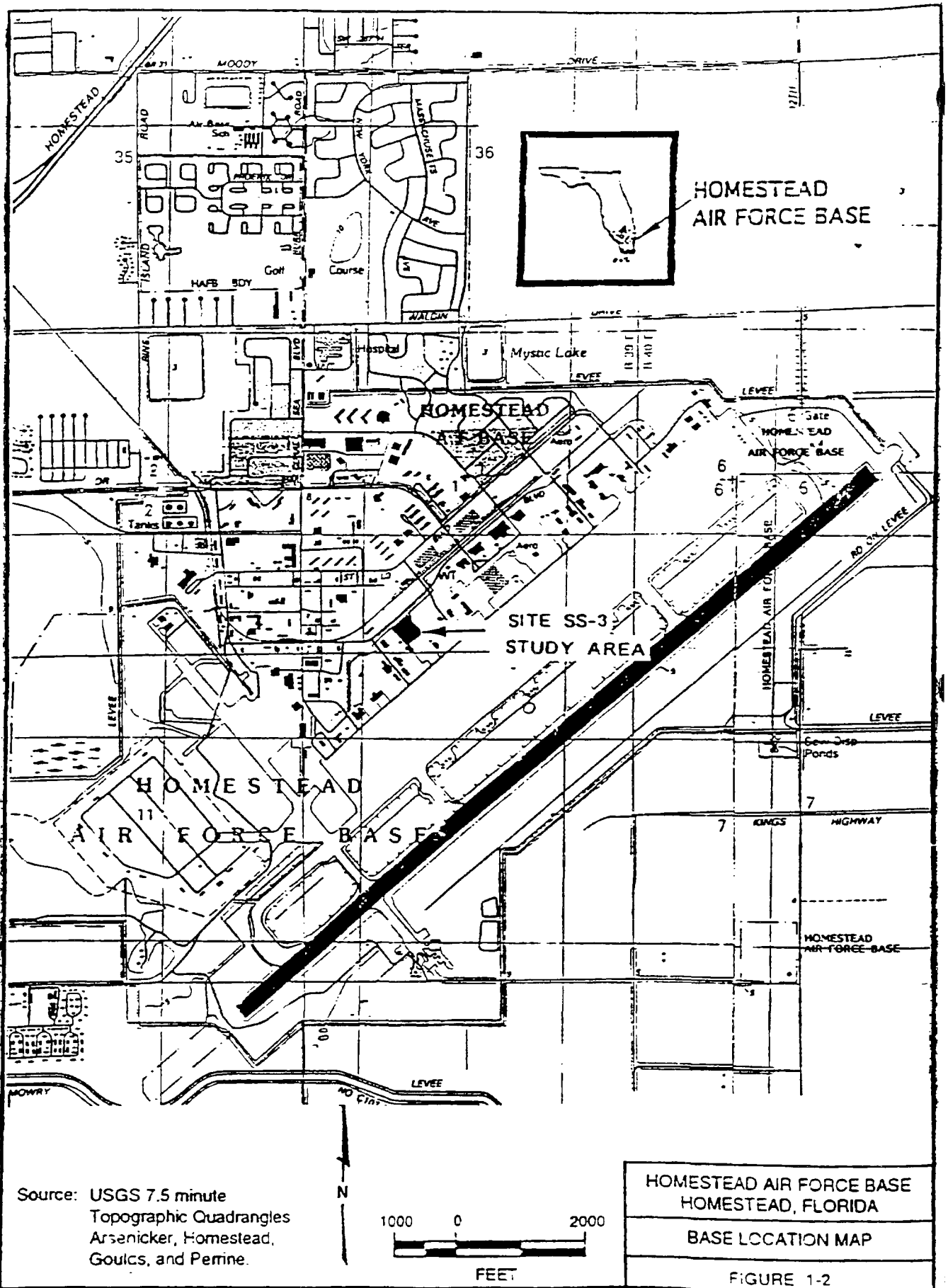
In September 1945, a severe hurricane caused extensive damage to the air field. The Base property was then turned over to Dade County and was managed by the Dade County Port Authority for the next eight years. During this period, the runways were used by crop dusters and the buildings housed a few small industrial and commercial operations.

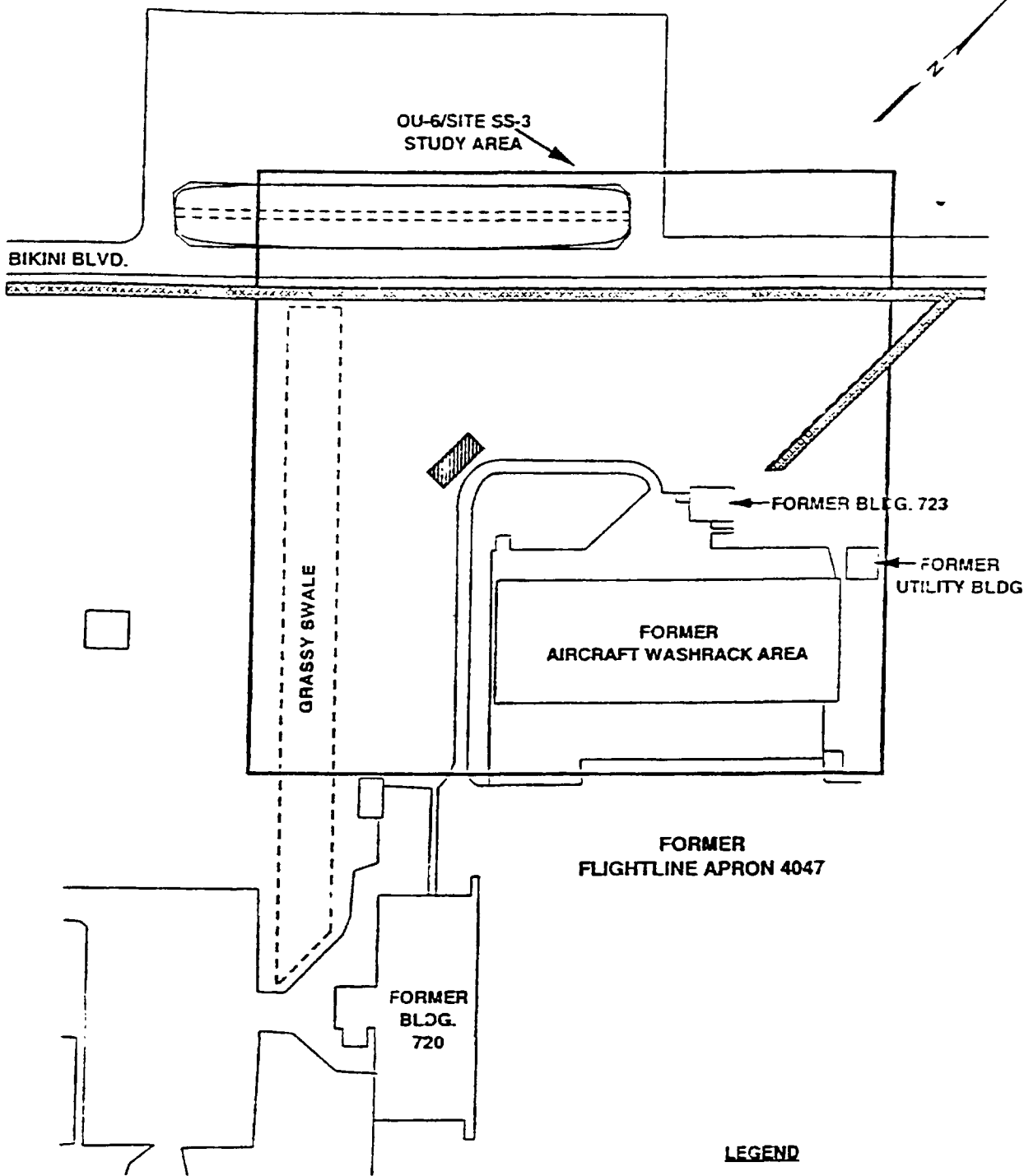
In 1953, the federal government again acquired the airfield, together with some surrounding property, and rebuilt the Site as a Strategic Air Command (SAC) Base. The Base operated under SAC until July 1968 when it was changed to the Tactical Air Command (TAC) and the 4531st Tactical Fighter Wing (TFW) became the new host. The Base was transferred to Headquarters Air Combat Command (HQ/ACC) on June 1, 1992.

In August 1992, Hurricane Andrew struck south Florida causing extensive damage to the Base. The Base was placed on the 1993 Base Realignment and Closure (BRAC) list and slated for realignment with a reduced mission. Air Combat Command departed the Base on March 31, 1994 with Air Force Reservists activated at the Base on April 1, 1994. The 482nd Force Fighter Wing now occupies approximately 1/3 of the Base with the remaining 2/3 slated for use and oversight by Dade County. OU-6 lies within that portion of the Base schedule to be turned over to Dade County.

1.3.1 SITE DESCRIPTION

OU-6 consists of the former Aircraft Washrack Area, Site SS-3 (former Site SP-7) and is located in the central portion of Homestead AFB (Figure 1-2). The site covers approximately three acres and has dimensions of approximately 320 feet by 400 feet. The site is bordered on the northwest by a drainage ditch located parallel to Bikini Boulevard, on the southwest by a low grassy swale, on the northeast by a ditch, and on the southeast by the asphalt Flight Apron 4047 (Figure 1-3). Stormwater formerly ran off from the Aircraft Washrack and surrounding areas to the drainage





LEGEND



FORMER ABOVE GROUND
STORAGE TANK LOCATION



DITCH



APPROXIMATE SCALE

HOMESTEAD AIR FORCE BASE
FLORIDA

OPERABLE UNIT 6/SITE SS-3,
AIRCRAFT WASHRACK
SITE MAP

FIGURE 1-3

ditch and swale located southwest and northeast of the site. The ditch and swale flow to the northwest towards the drainage ditch. The drainage ditch, adjacent and parallel to Bikini Boulevard, flows from southwest to northeast for approximately one mile before draining into the Boundary canal which borders Homestead AFB. One to two feet of water are typically present in the drainage ditch adjacent to the site.

Prior to Hurricane Andrew, the site consisted of a covered, concrete and asphalt aircraft washrack structure, a utility building and Building 723. Structures at the site were removed subsequent to Hurricane Andrew, leaving no physical evidence of the former washrack operations. The area surrounding the washrack is covered with grass. The site is underlain by heavily weathered limestone bedrock of the Miami Oolite formation, which is typically covered with less than two inches of soil. Formerly, approximately 35% of OU-6/Site SS-3 area was covered with asphalt and/or concrete. The concrete and asphalt areas were removed during implementation of the remedial action at this site and an open excavation scheduled for backfill and closure remains.

1.3.2 PAST SITE USAGE

Two above ground storage tanks with capacities of 750 and 1,500 gallons were used to store contaminated oils, hydraulic fluids, spent solvents, and other liquid wastes from the flightline shops. The tanks were located in the western portion of the site, as illustrated on Figure 1-3. During storage and removal operations, conducted from 1970 to 1980, frequent spills and overflows reportedly occurred onto the ground. Dumping of liquid wastes in the area of OU-6/Site SS-3 were also reported during this time. The total quantity of organic fluids release to the soil is unknown. Once liquid waste disposal operations were halted, the tanks were removed and off-site disposal operations began in 1980. Soils in the former tank area, which were reportedly discolored at the time of tank removal, have either been removed from the site or covered, leaving no visible evidence of waste residue.

1.4 REGIONAL LAND USE

The area adjacent to Homestead AFB including OU-6/Site SS-3, to the west, east, and south within a half-mile radius is primarily composed of farmland and plant nurseries. Residential areas are located within a half-mile to the north and southwest of the Base. Woodlands are located approximately one-half-mile east of the facility and mangroves and marsh occur adjacent to Biscayne Bay. The Biscayne National Park is located 2 miles east of Homestead AFB; the

Everglades National park is located 8 miles west-southwest of the Base; and the Atlantic Ocean is approximately 8 miles east of the Base. While the Air Force has departed the base, approximately 1/3 of the base will be retained by the Air Force. The remainder of the base is scheduled to be retained by Dade County for reuse and redevelopment. The primary mission of which will remain aviation and supporting activities.

1.5 SURFACE HYDROLOGY

Surface hydrology at Homestead AFB, including OU-6/Site SS-3 is controlled by five main factors: 1) relatively impermeable areas covered by runways, buildings and roads; 2) generally high infiltration rates through the relatively thin layer of soil cover; 3) flat topography; 4) generally high infiltration rates through the outcrop locations of the Miami Oölite Formation; and 5) relatively high precipitation rate compared to evapotranspiration rate. Infiltration is considered to be rapid through surfaces of oölite outcrop and areas with a thin soil layer. Infiltration rates are accelerated by fractures within the oölite, as well as naturally occurring solution channels. Precipitation percolates through the relatively thin vadose zone to locally recharge the unconfined aquifer.

Natural drainage is limited because the water table occurs at or near land surface. The construction of numerous drainage canals on Homestead AFB has improved surface water drainage and lowered the water table in some areas. Rainfall runoff from within Homestead AFB boundaries is drained via diversion canals to the Boundary Canal. Water in the Boundary Canal flows generally south and east along the western boundary of the property, and south along the eastern boundary, converging at a storm-water reservoir located at the southeastern corner of the Base. Flow out of the stormwater reservoir flows into Outfall Canal, which, in turn, flows east into Biscayne Bay, approximately 2 miles east of the Base. Water movement is typically not visible in the canals in dry weather due to the lowered water table and the very low surface gradient (0.3 feet per mile) that exists at the Base.

1.6 SITE GEOLOGY AND HYDROGEOLOGY

The stratigraphy of the shallow aquifer system as determined from soil borings performed during site investigations by Geraghty & Miller (G&M) and Montgomery Watson consists of a surficial weathered Miami Oölite ranging in depth from 2 to 6 feet below ground surface (bgs). The weathered limestone consists of a white to brown semi-consolidated oölitic limestone. This strata is underlain by consolidated to semi-consolidated oölitic and coral limestone interbedded

with coarse to fine sand and clayey sand layers and lenses down to the total depth of borings (approximately 40 feet bgs).

The Biscayne Aquifer which underlies Homestead AFB, is one of the most transmissive aquifers in the world. The Biscayne Aquifer at Homestead AFB consists of the Miami Oölite, Fort Thompson Formation, and the uppermost part of the Tamiami Formation. In general, the most permeable parts of the aquifer lie within the Miami Oölite and the Fort Thompson Formation.

The Biscayne Aquifer underlies all of Dade, Broward, and southeastern Palm Beach Counties. The Biscayne Aquifer is the sole source of potable water in Dade County and is a federally-designated sole-source aquifer pursuant to Section 1425 of the Safe Drinking Water Act (SDWA). The Biscayne Aquifer also supplies drinking water to approximately 2.5 million people within these local communities. All recharge to the aquifer is derived from local rainfall, part of which is lost to evaporation, transpiration, and runoff.

The Biscayne Aquifer has reported transmissivities ranging from approximately 4 to 8 million gallons per day per foot (mgd/ft) (Allman et al., 1979). A thin vadose zone, nominally less than 5 feet deep, overlays the groundwater table at the site.

1.7 REASONS LEADING TO A ROD AMENDMENT

After the original ROD was signed, new information was generated during the Remedial Design/Remedial Action (RD/RA) process that affected the remedy selected in the ROD. Changes to a ROD are classified as one of three types: (1) non-significant changes; (2) significant changes; and (3) fundamental changes. If non-significant or minor changes occur, it is recorded in the post-decision document file; if significant change are made to the remedy these changes are documented in an Explanation of Significant Differences (ESD); and if fundamental changes to the overall remedy are identified, these changes are documented in a ROD Amendment. The USEPA has determined that the additional information developed at OU-6/Site SS-3 constitute a fundamental change.

As outlined in the ROD and the approved Remedial Action Work Plan for OU-6, the selected remedial action required the removal of contaminated soils, off-site thermal treatment and disposal of excavated soils, and removal of the source light non-aqueous phase liquid (LNAPL).

During the remedial action activities at OU-6, several fundamental changes have occurred between the selected remedy in the ROD and conditions at the site. These fundamental changes are described in the following sections.

1.7.1 REVISED CONTAMINATED SOIL VOLUME

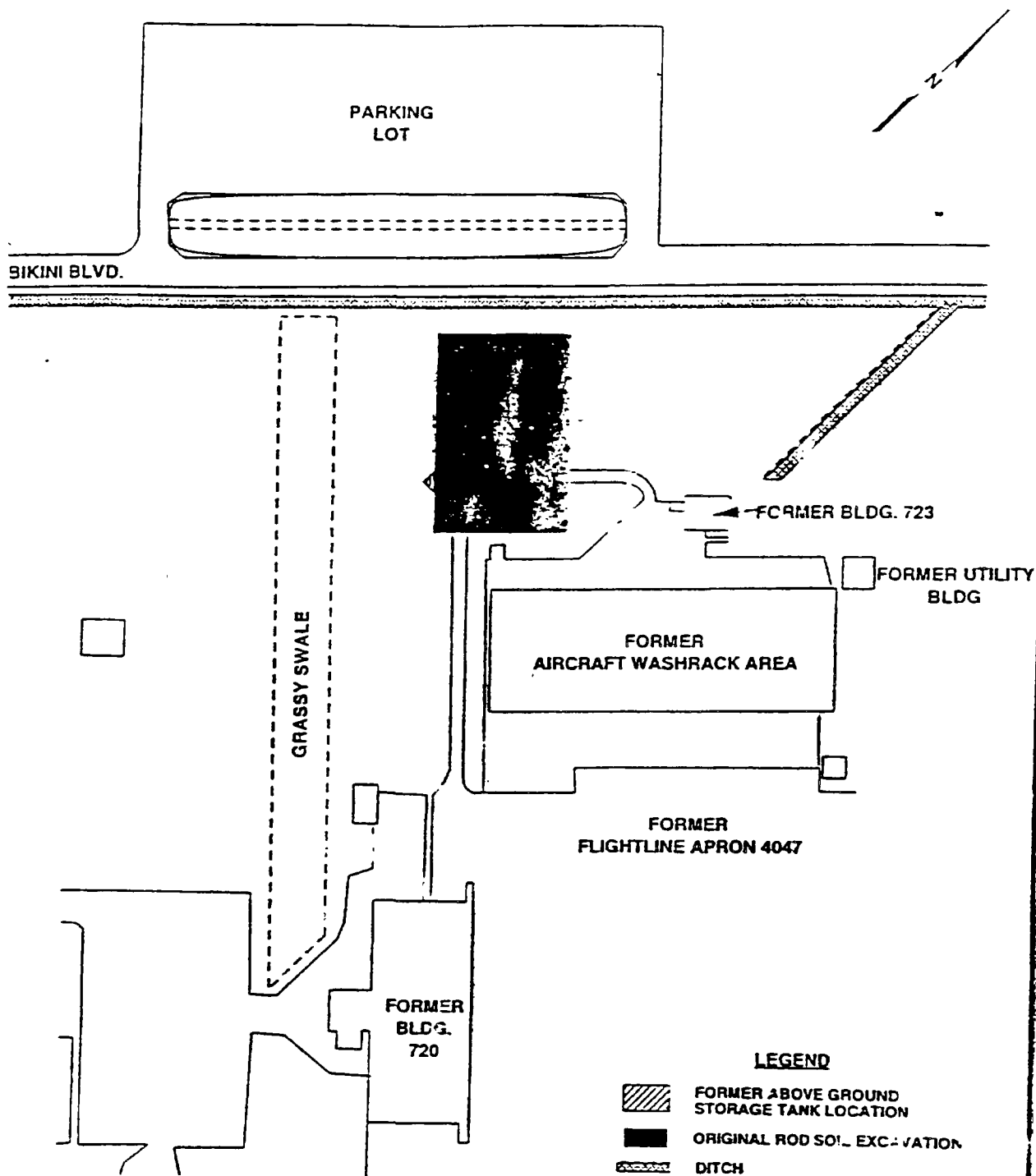
The ROD indicated excavation of soil/rock from an approximate 125-ft long by 75-ft wide by 6-ft deep area (2,100 cubic yards) as depicted in Figure 1-4. Montgomery Watson authored the original ROD on behalf of the U.S. Corps of Engineers, Omaha District in March 1995, and provided OHM Corporation, the RD/RA contractor, with the corner survey coordinates for the area of inferred soil excavation, as outlined in the ROD on January 4, 1996. The limits of the excavation were surveyed on January 8, 1996.

OHM Corporation, under contract to the Air Force Center for Environmental Excellence (AFCEE), began soil excavation on January 15, 1996. The excavation was completed to the limits referenced above on February 20, 1996. Confirmation soil samples were collected at depths of 0-2 feet below land surface (bls) and 3-5 feet bls from 16 locations along the finished sidewalls of the excavation for organic vapor analyzer - flame ionization detector (OVA-FID) vapor headspace analysis. Excessively contaminated soil (as defined in Florida Administration Code (FAC) Chapter 62-770) was reported in eight of the 16 confirmation soil sampling locations.

On March 4 through 7, 1996, OHM Corporation completed an additional 53 "step-out" soil borings at OU-6 to further delineate the extent of the excessively contaminated soil. Soil samples were collected at depths of 0-2 feet, 2-4 feet and 4-6 feet bls for headspace vapor screening with an OVA-FID. Based on soil boring field screening results from these locations, excessively contaminated soil extends to the east-northeast and west-southwest of the original excavation. The additional volume of excessively contaminated soil remaining in-situ at OU-6 has been estimated at approximately 1,350 cubic yards (Figure 1-5).

1.7.2 REVISED LIGHT NON-AQUEOUS PHASE LIQUID VOLUME

During the development of the Feasibility Study, the volume of LNAPL estimated to be present at OU-6 was approximately 5,600 gallons. The amount of LNAPL recovered during the remedial action was significantly less, with approximately 55 gallons of LNAPL recovered to date.

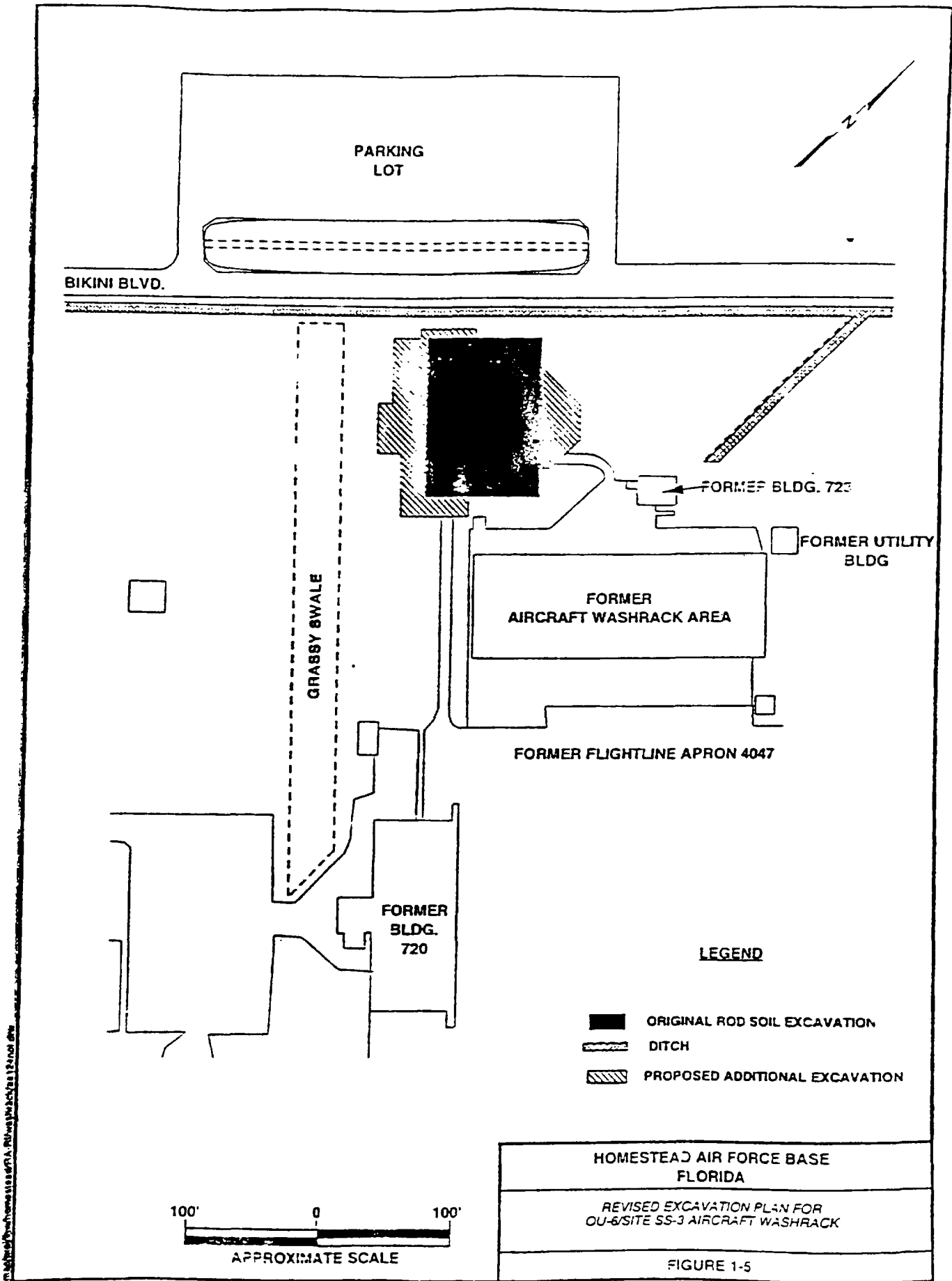


HOMESTEAD AIR FORCE BASE
FLORIDA

ORIGINAL ROD EXCAVATION PLAN FOR
OU-6/SITE SS-3 AIRCRAFT WASHRACK

FIGURE 1-4

msr/pof/homestead/NA-RVwashrack/na12ind.dwg



1.7.3 POSSIBLE HAZARDOUS CHARACTERISTICS OF EXCAVATED SOILS

As stated in Section 2.9.2 of the ROD, "the excavated soil at OU-6 may be a hazardous waste as defined by toxicity characteristic leaching procedures (TCLP)." Therefore, the soil was slated for disposal at a RCRA permitted facility. Additionally, the facility will use thermal desorption technology to treat the waste prior to landfilling.

However, eight composite soil profile samples (as defined in FAC 62-775) were collected from the original stockpiled 2,100 cubic yards of excavated soil/bedrock and were submitted for waste full screen TCLP organic and inorganic analysis, as well as the analytical parameters described in FAC Chapter 62-775. Laboratory analyses of the excavated and stockpiled soil at OU-6 indicate the material does not meet the criteria of a hazardous waste. Therefore, the excavated soil is suitable for disposal at a RCRA permitted Subtitle D landfill as opposed to a Subtitle C hazardous waste landfill.

Additionally, the USEPA has determined that thermal treatment of the excavated soils will not be required and that the material may be disposed of in accordance with all applicable rules and regulations of the State of Florida guideline for petroleum contaminated sites (FAC 62-775). The USEPA has determined that the changes outlined above constitutes a fundamental change and that the preparation of a ROD amendment is appropriate for OU-6.

The ROD Amendment for OU-6 will become a part of the Administrative Record File in accordance with the NCP Section 300.825(a)(2). The ROD Amendment will be available for review at the Information Repository maintained at the Homestead Air Force Base Conversion Agency Office, location Y, Building 931. Hours of availability: Monday through Friday from 8:00 until 4:00 (appointment only).

2.0 REASONS FOR ISSUING THE ROD AMENDMENT

2.1 SCOPE AND ROLE OF RESPONSE ACTION

As with many Superfund sites, the problems at OU-6/Site SS-3 are complex. The contamination at the site is considered to exist as three media:

- One: an immiscible layer (LNAPL) in soil/rock pore space
- Two: contaminated soil/rock
- Three: dissolved constituents in groundwater (contaminant plume)

The response action authorized by this ROD actively addresses the contamination in two of the three media; the LNAPL and the contaminated soil/rock. It is anticipated that excavation and disposal of the contaminated soil and extraction of the LNAPL will allow for rapid attenuation of the localized contaminant plume.

As determined in previous studies of OU-6, the site does not pose unacceptable risk to human health or the environment, but does represent a potential for localized degradation of groundwater quality. Although residential reuse of the site is unlikely, a hypothetical future risk to residents is above FDEP guidelines for groundwater. The source of the groundwater contamination is suspected to be the LNAPL and the contaminated soil/rock. The purpose of this response is to eliminate the sources and allow the groundwater to naturally attenuate at an anticipated rapid pace. This alternative offers a permanent solution for the site.

2.2 DESCRIPTION OF ALTERNATIVES

Four alternatives were originally analyzed in the Feasibility Study and ROD for OU-6/Site SS-3. A summary of these original alternatives are presented below. The alternatives are numbered to correspond with the alternatives as presented in the Feasibility Study report. The alternatives for site clean-up are the following:

- Alternative 1: No Action with Groundwater Monitoring
- Alternative 2: Passive LNAPL Recovery, Institutional Controls, and Natural Attenuation
- Alternative 3: Passive LNAPL Recovery, Bioremediation/Air Sparging, and Institutional Controls
- Alternative 4: Excavation and Off-Site Thermal Treatment, Disposal of Contaminated Soils, and Natural Attenuation and Institutional Controls

Each alternative presented includes long-term groundwater monitoring. Alternative 3 is the only alternative that required active remediation of the groundwater. Groundwater monitoring activities are used to gauge the effectiveness of the selected remedy.

Except for Alternative 1, each alternatives has the potential to meet USEPA remedial action objectives and potentially meet the clean-up goals. It is the time, cost, and certainty in reaching these standards that differentiates the alternatives.

2.3 REMEDY SELECTED IN THE ROD

Based on the requirements of CERCLA, a detailed evaluation of the alternatives and public comments, the USAF in concurrence with the USEPA and the State of Florida determined the original selected remedy for OU-6/Site SS-3 to be Alternative 4 Excavation and Off-Site Thermal Treatment and Disposal of Contaminated Soils. Based on the information at the time, it was determined that this alternative offered the most reliable and expedient solution. It offered a permanent solution that is protective of human health and the environment. And serves to protect the groundwater from further contamination. The NCP (40 CFR 300) views groundwater as a valuable resource to be protected and restored to beneficial use wherever possible.

The major components of the selected remedy include:

- Excavation of soil/rock from an approximate 125 ft by 75 ft by 6 ft (2,100 cubic yards) area. The soil is slated for disposal at a RCRA permitted facility. The facility will use off-site thermal desorption technology to treat the waste. Fill material will be brought to the site to return the area to grade.
- Recovery of approximately 5,600 gallons of LNAPL. The LNAPL is slated for energy recovery (i.e., recycling) at a facility to be determined.
- Groundwater monitoring will be performed at the site for 2 years to show that natural attenuation will meet performance standards (clean-up levels) applicable to contaminated groundwater.
- Five year review to determine whether the remedy remains protective of human health and the environment.
- Institutional controls to avoid contact with contaminated groundwater until protective levels have been met.

2.4 RATIONALE FOR ALTERNATIVE REMEDY

As outlined in the ROD and the approved Remedial Action Work Plan for OU-6, the selected remedial action includes the removal of contaminated soils, off-site thermal treatment and disposal of excavated soils, and removal of the source LNAPL. The excavation was completed to the limits referenced above on February 20, 1996. Soil samples were collected at depths of 0-2 feet bls and 3-8 feet bls from 16 locations along the finished sidewalls of the excavation for OVA-FID vapor headspace analysis. Excessively contaminated soil (as defined in FAC Chapter 62-770) was detected in samples collected from eight of the 16 sample locations.

Fifty three additional soil borings were then completed around the OU-6 excavation to further delineate the extent of the excessively contaminated soil. Based on the results of the delineation soil borings and field screening analysis, excessively contaminated soil extends to the east-northeast and west-southwest of the original excavation. An estimated 1,350 cubic yards of excessively contaminated soil remains in-situ at OU-6 (Figure 1-5).

Furthermore, the ROD anticipated the possible need for hazardous waste treatment and disposal for the excavated soil at OU-6. Laboratory analysis of the excavated soil at OU-6 indicated the soil is non hazardous and suitable for disposal at a RCRA permitted Subtitle D Landfill.

The cost estimate to excavate the additional 1,350 cubic yards of soil, collect additional soil samples for disposal characterization, place the additional backfill material, and perform disposal of the additional contaminated soil is approximately \$103,000. However, given the revisions to the waste management approach, an overall reduction in the project cost is estimated at \$100,740. This overall reduction in project costs is based on the fact that less transportation and handling is required, disposal in a subtitle D facility is less expensive than a subtitle C facility, and there was a lower than expected volume of LNAPL encountered (55 gallons verses 5,600 gallons).

3.0 DESCRIPTION OF AMENDED ALTERNATIVE

Amended Alternative 4 - Excavation and Off-Site Disposal of Contaminated Soils, and Natural Attenuation and Institutional Controls of Groundwater consist of:

- Excavation of soil/rock to meet performance standards, approximately 3,450 cubic yards (2,100 cubic yards originally excavated plus an additional 1,350 cubic yards subsequently

identified) and replacement with equal volume of fill material. Off-site disposal of excavated soil at a RCRA Subtitle D landfill.

- Sending LNAPL to off-site disposal through energy recovery.
- Groundwater monitoring with five year site review until contaminants are at levels considered protective of human health and the environment.
- Disposal of water collected during excavation which meets standards required by the POTW. If the water does not meet performance standards, treatment will need to occur before disposal at a POTW.
- Institutional controls to restrict the placement of potable wells in the contaminated groundwater near or beneath the site until such time as the benzene concentrations in groundwater to be < 1 µg/l. It is expected that this level will be achieved within 5-years.

Soil will be excavated to a depth of 6 feet over the inferred aerial extent of soil contamination (Figure 1-5). Field screening supported by laboratory analyses will be conducted to verify that soil meeting the performance standards is encountered at the bottom and extent of excavation.

An oil skimmer will be employed during the excavation to collect the estimated 55 gallons of LNAPL. The LNAPL will be removed to an energy recovery facility and any water generated during removal operations disposed of through a POTW.

The sampling and analysis for soils show that the only constituents of concern at OU-6/Site SS-3 are Naphthalene and 2-Methylnaphthalene. In accordance with FAC Chapter 62-775, the applicable performance standard for soil cleanup shall be 1 mg/kg for PAHs and 50 mg/kg for total recoverable petroleum hydrocarbon (TRPH). Since the lateral and vertical extent of soil contamination will be removed to conform to the applicable State standard referred above, no access and land development restrictions are contemplated to be enacted and/or enforced by deed.

This alternative also includes semiannual sampling of the site's monitoring wells for two years to monitor the effect of removing the source (LNAPL) of groundwater contamination. The samples would be analyzed for base neutral and acid extractable compounds (BNAs) and volatile organic analysis (VOAs). Applicable performance standards and guidance for monitoring of the

groundwater include Federal and State groundwater maximum concentration levels (MCLs). Should the monitoring program indicate that contaminant levels have not naturally attenuated to performance standards described in FAC Chapters 62-550. (Drinking Water Standards), active groundwater remediation will be considered. Groundwater use restrictions enacted by deed are expected until groundwater at OU-6/Site SS-3 conforms with the performance standards described in FAC Chapters 62-550 and 62-520 (Groundwater Standards and Classification).

The estimated present worth cost of this alternative is \$589,000 with a 5 year duration.

4.0 EVALUATION OF ALTERNATIVES

4.1 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

A summary and comparison of the alternatives are presented in Tables 4-1 and 4-2. The comparison is based on the nine key criteria required under the National Contingency Plan and CERCLA Section 121 for use in evaluation of remedial alternatives by EPA. The nine criteria are as follows:

- Overall protection of human health and the environment.
- Compliance with Applicable or Relevant and Appropriate Requirements (ARAR).
- Long-term effectiveness and permanence.
- Reduction of toxicity, mobility, or volume.
- Short-term effectiveness.
- Implementability.
- Cost.
- State acceptance .
- Community acceptance.

4.1.1 Overall Protection of Human Health and Environment

Amended Alternative 4 meets Remedial Action Objectives for the site and provide protection of human health and the environment. The original Alternative 4 would leave approximately 1,350 cubic yards of excessively contaminated soil in-situ.

TABLE 4-1

SUMMARY OF SCREENING OF REMEDIAL ALTERNATIVES FOR OU-6/SITE SS-3

Alternative	Effectiveness	Implementability	Present Worth Cost
4 - Excavation and Off-site Thermal Treatment, Disposal of Contaminated Soils, and Natural Attenuation and Institutional Controls of Groundwater.	Reduces MTV of hydrocarbons in soils (approximately 1,350 cubic yards of excessively contaminated soils remain in-situ) and groundwater. Meets USEPA remedial action objectives and relies on natural attenuation of benzene in groundwater to meet cleanup goals. Does not meet FDEP 62-770 criteria.	Uses conventional equipment and proven methods. Easily implementable. Excavation is complete; may require 5 years for natural attenuation of dissolved benzene.	\$ 690,000
Amended 4 - Excavation and Off-site Disposal of Contaminated Soils, and Natural Attenuation and Institutional Controls of Groundwater.	Reduces MTV of hydrocarbons in soils and groundwater. Meets USEPA remedial action objectives and relies on natural attenuation of benzene in groundwater to meet cleanup goals.	Uses conventional equipment and proven methods. Easily implementable. Excavation could be implemented within 6 months; may require 5 years for natural attenuation of dissolved benzene.	\$ 589,000

(a-MTV=mobility, toxicity, and volume)

TABLE 4-2
COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES, OU-6/SITE SS-3

Evaluation Criteria	Remedial Alternative	
	4 Excavation and Off-Site Thermal Treatment, Disposal, Natural Attenuation and Institutional Controls	Amended 4 Excavation and Off-Site Disposal, Natural Attenuation and Institutional Controls
Overall Protection of Human Health & Environment	Δ	O
Compliance w/ARARs	O	O
Long-Term Effectiveness and Permanence	Δ	O
Reduction of Toxicity, Mobility, or Volume	O	O
Short-Term Effectiveness	O	O
Implementability	Easy	Easy
Estimated Present Worth	\$690,000	\$589,000

Δ Does not meet criterion

O Meets criterion

* Has potential to meet criterion

4.1.2 Compliance with Federal/State Standards

There are no ARARs for soil/weathered bedrock contamination at OU-6/Site SS-3. The ARARs for groundwater contamination at OU-6/Site SS-3 are the state and federal maximum concentration levels (MCLs), the federal non-zero MCLGs, the state SMCLs, and the Florida 62-770 regulations. Benzene is the only contaminant found in the groundwater at OU-6/Site SS-3 at a concentration above either its state or federal ARAR. Benzene was detected in the groundwater sample collected in 1993, from the one well that contained LNAPL, at a concentration of 70 µg/L, which is above the state MCL of 1 µg/L and the federal MCL of 5 µg/L. LNAPL, a likely source for the benzene, is present in the pore space vadose zone. The more soluble constituents of the LNAPL i.e., benzene, toluene, and the high percent constituents of the LNAPL composition are slowly dissolving into the groundwater thereby providing a continuing source of groundwater contamination. Alternative 4 and Amended Alternative 4 meet the ARAR objective for OU-6/Site SS-3.

4.1.3 Long-term Effectiveness and Permanence

Amended Alternative 4 provide long-term effectiveness and permanence for OU-6/Site SS-3. Alternative 4 leaves approximately 1350 cubic yards of excessively contaminated soil in-situ.

4.1.4 Treatment to Reduce Toxicity, Mobility or Volume

Alternative 4 and Amended Alternative 4 would reduce the volume of the contaminants through excavation of the contaminants from the Site and off-site treatment and disposal. However, with Alternative 4 approximately 1,350 cubic yards of excessively contaminated material would remain in-situ at OU-6/Site SS-3.

4.1.5 Short-term Effectiveness

The excavation associated with Alternative 4 is complete. The excavation associated with Amended Alternative 4 is expected to be complete with six months. The excavation of soil may impose risks by disturbing the contamination, however, it would not be expected to pose unacceptable short-term environmental or health hazards, which could not be controlled. The alternative is expected to achieve attainment five years after excavation is complete. Total time for the site to attain protectiveness is estimated at six years.

4.1.6 Implementability

Alternative 4 and Amended Alternative 4 would be easy to moderately easy to implement.

4.1.7 Cost

The alternatives are moderately expensive and approximately equal in cost with Amended Alternative 4 having the best opportunity for long-term effectiveness and permanence given the relatively small differences in cost between alternatives.

4.1.8 State and Community Acceptance

Alternative 4 has been accepted by the state and community because it offers a permanent solution and is protective of human health and the environment. Amended Alternative 4 has been accepted by the state and represents a fundamental change from Alternative 4 selected in the ROD. Community acceptance of Amended Alternative 4 is expected because it also offers a permanent solution and is protective of human health and the environment. Community concerns will be addressed during the public meeting and will be summarized in the "Responsiveness Summary" of this ROD Amendment.

4.2 SELECTED AMENDED REMEDY

Operable Unit No. 6 represents the only unit at Homestead AFB to be addressed by this ROD Amendment. This ROD Amendment addresses the source of contaminated soil and groundwater (i.e., LNAPL) and the removal of the source. Characterization of the excavated soil at the site has found it non-hazardous and suitable for disposal at a RCRA Subtitle D landfill. This action addresses the principal threat at the site by removing the contaminated soils and the source, LNAPL. The localized contaminated groundwater is expected to naturally attenuate to within standards protective of human health and the environment and below acceptable risk soon after the removal of the contaminated soil and LNAPL.

Based on consideration of the requirements of CERCLA, the detailed evaluation of the alternatives and public comments, the USAF in concurrence with the USEPA and the State of Florida has determined the selected remedy for OU-6/Site SS-3 to be Amended Alternative 4 - Excavation and Off-Site Disposal of Contaminated Soils, and Natural Attenuation, and Institutional Controls for Groundwater. It is the most reliable and expedient solution identified.

It offers a permanent solution that is protective of human health and the environment. It will serve to protect the groundwater from further contamination. The NCP (40 CFR 300) views groundwater as a valuable resource to be protected and restored to beneficial use wherever possible.

The major components of the amended selected remedy include:

- Excavation of approximately 3,450 cubic yards of soil/rock to meet performance standards (2,100 cubic yards originally excavated plus an additional 1,350 cubic yards subsequently identified), and replacement with equal volume of fill material. Off-Site disposal of excavated soil at a RCRA Subtitle D landfill.
- Sending LNAPL for off-site disposal through energy recovery (i.e., recycling) at an approved facility.
- Semi-annual groundwater monitoring will be performed at the site for 2 years to determine if natural attenuation will meet performance standards (clean-up levels) applicable to contaminated groundwater.
- Institutional controls to preclude the placement of potable wells in the contaminated groundwater near or beneath the site until such time as benzene concentrations in groundwater are less than 1 µg/L. It is expected that this will be achieved via natural attenuation and source removal within 5 years.
- If after the five year review, the selected remedial action has not restored the condition of OU-6/Site SS-3 to a level that assures protection of human health and the environment, the USEPA, FDEP, DERM, and the Air Force will evaluate the need for further action.

5.0 STATUTORY DETERMINATIONS

Under its legal authorities, USEPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve adequate protection of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for this site must comply with applicable or relevant and appropriate environmental standards established under

Federal and State environmental laws unless a statutory waiver is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element. The selection of Amended Alternative 4 Excavation and Off-Site Disposal of Contaminated Soils and Natural Attenuation and Institutional Controls of Groundwater at OU-6/Site SS-3 meets the statutory determinations for this site.

Because the remedy may result in hazardous substances remaining on-site in the groundwater above health-based levels (benzene in groundwater), a review will be conducted five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment. The review will be performed every five years thereafter until protectiveness is achieved.

Homestead Air Force Base, Florida

Operable Unit No. 6, Site SS-3, Aircraft Washrack Area

Responsiveness Summary for the Record of Decision Amendment

RESPONSIVENESS SUMMARY

FOR THE

RECORD OF DECISION

The responsiveness summary serves three purposes. First, it provides regulators with information about the community preferences regarding both the remedial alternatives and general concerns about OU-6, Homestead AFB. Second, the responsiveness summary documents how public comments have been considered and integrated into the decision making process. Third, it provides the Air Force with the opportunity to respond on the record to each comment submitted by the public.

The Remedial Investigation/Baseline Risk Assessment report and the Proposed Plan for OU-6/Site SS-3 were released to the public in June and November 1994, respectively. These documents were made available to the public in both the administrative record and an information repository maintained at Homestead Air Force Base.

A public comment period was held from November 8, 1994 to December 22, 1994 as part of the community relations plan for the original OU-6 ROD. Additionally, a public meeting was held on Tuesday, November 29, 1994, at 7:00 PM at South Dade High School. A public notice was published in the Miami Herald and South Dade News Leader on Tuesday, November 22, 1994. At this meeting, the USAF, in coordination with USEPA Region 4, FDEP, and DERM discussed the investigation, results of the Baseline Risk Assessment, and the Preferred Alternative described in the Proposed Plan.

A fundamental change which results in a ROD Amendment also requires a new proposed plan, publication, public meeting, and public comment period.

A public comment period was held from November 20, 1996 to December 20, 1996, as part of the community relations plan for OU-6. Additionally, a public meeting was held on November 20, 1996 at 7:00 in the South Dade High School Auditorium. A public notice was published in the South Dade New Leader on November 6, 1996, The Courier November 8, 1996, and the Miami Herald on November 7, 1996. At this meeting, the USAF, in coordination with USEPA Region 4, FDEP, and DERM discussed the fundamental change to the ROD and the new preferred alternative described in the Proposed Plan.

No comments were received during the public comment period regarding the amended remedial alternative.