



STATEMENT OF BASIS
SPACE LAUNCH COMPLEX 20
SOLID WASTE MANAGEMENT UNIT NO. 43
45TH SPACE WING
CAPE CANAVERAL AIR FORCE STATION
BREVARD COUNTY, FLORIDA



PURPOSE OF STATEMENT OF BASIS

This Statement of Basis (SB) has been developed in order to inform the public and give the public an opportunity to comment on a proposed remedy to clean up contamination at Space Launch Complex 20 (SLC-20). A 45th Space Wing (45th SW) installation restoration partnering (IRP) team consisting of United States Air Force (USAF), United States Environmental Protection Agency (USEPA), the State of Florida Department of Environmental Protection (FDEP), the U. S. Army Corps of Engineers, and various environmental consultants

Brief Site Description

SLC-20 is located at the northern terminus of ICBM Road, between SLC-19 and SLC-34 (See Figure 1). The Site was originally constructed in the late 1950's for the Titan I Missile Program, and was later modified to support other launch programs.

an opportunity for the public to comment on the proposed remedy. At any time during the public comment period, the public may comment as described in the "How Do You Participate" section of the SB. Upon closure of the public comment period, the 45th SW IRP team will evaluate all comments and issues raised in the comments and determine if there is a need to modify the proposed remedy prior to implementation.

ants have determined that the proposed remedy is cost effective and protective of human health and the environment. However, prior to implementation of the proposed remedy, the 45th SW IRP team would like to give

WHY IS CLEANUP NEEDED?

The results of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) indicated that Aroclor 1260, a type of polychlorinated biphenyl (PCB), is present in the surface soils at levels that could be potentially harmful to hypothetical future residents.

HOW DO YOU PARTICIPATE?

The 45th SW IRP team solicits public review and comment on this SB prior to implementation of the proposed remedy as a final remedy. The final remedy for SLC-20 will eventually be incorporated into the Hazardous and Solid Waste Amendments (HSWA) Permit for Cape Canaveral Air Force Station (CCAFS).

The public comment period for this SB and the proposed remedy will begin on the date that a notice of the SB's availability is published in a

The Clean-up Remedy

The proposed clean-up remedy for SLC-20 includes (but is not limited to) the following components:

- Implementation of land use controls designed to prevent exposure to site contaminants. These include:
 - Prohibition of residential development
 - Quarterly monitoring requirements
 - Posting warning signs on-site

A complete list of land use controls and other protective measures are found in the SLC-20 Land Use Control Implementation Plan (LUCIP)

major local newspaper of general circulation. The public comment period will end 45 days thereafter. If requested during the comment period, the 45th SW IRP team will hold a public meeting to respond to any oral comments or questions regarding the proposed remedy. To request a hearing or provide comments, contact the following person in writing within the 45-day comment period:

Mr. Jorge Caspary
FDEP-Bureau of Waste Cleanup
2600 Blair Stone Road, MS-4535
Tallahassee, FL 32399-2400
E-mail: Jorge.Caspary@dep.state.fl.us
Telephone: (850) 921-9986

The HSWA Permit, the SB, and the associated Administrative Record, including the RFI Report, will be available to the public for viewing and copying at:

Environmental Management, CEV/ESC
Facility 1638, Samuel Phillips Parkway
Cape Canaveral Air Force Station, FL
For public access call (321) 853-0965

This information can also be found on-line at http://www.mission-support.org/45SW_IRP_EA

The HSWA Permit, the SB, and SLC-19 Report summaries will be available for viewing and copying at:

Central Brevard Library
308 Forrest Avenue
Cocoa, FL, 32922

To request further information, you may contact one of the following people:

Ms. Teresa Green
Environmental Restoration Element Chief
45 CES/CEVR
1224 Jupiter Street
Patrick Air Force Base, FL 32925-3343
E-mail: teresa.green@patrick.af.mil
Telephone: (321) 853-0965

Mr. Jorge Caspary
See previous contact information

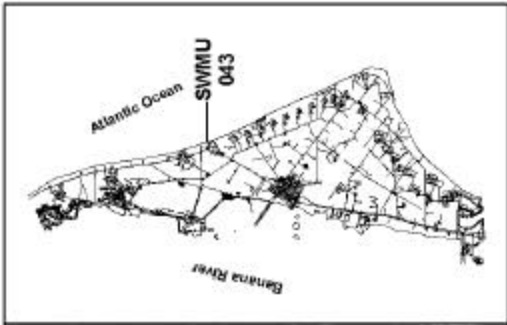
Mr. Timothy R. Woolheater, P. E.
EPA Federal Facilities Branch
Waste Management Division
Sam Nunn Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960
E-mail: woolheater.tim@epamail.epa.gov
Telephone: (404) 562-8510

FACILITY DESCRIPTION

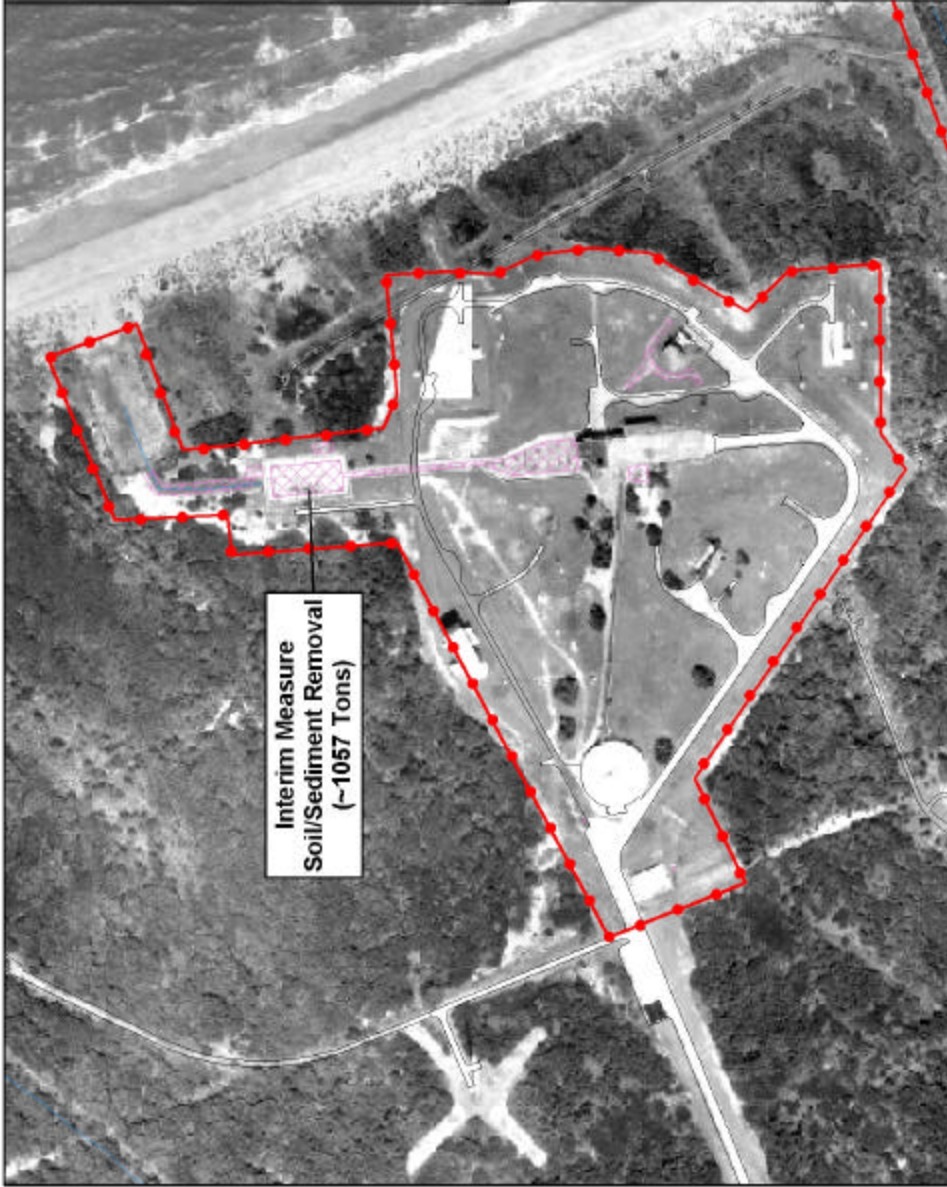
USAF established the 45th SW as the primary organization for the Department of Defense aerospace force programs. Historically, the National Aeronautics and Space Administration (NASA) also performed space launch-related operations on the 45th SW property. These operations have involved the use of toxic and hazardous materials. Under RCRA and the HSWA Permit (CCAFS Permit No. FL2800016121) issued by the USEPA, the 45th SW was required to perform an investigation to determine the nature and extent of contamination from Solid Waste Management Unit (SWMU) No. 43, Space Launch Complex 20.

SITE DESCRIPTION AND HISTORY

SLC-20 is located at the northern terminus of the Intercontinental Ballistic Missile (ICBM) Road, between Space Launch Complex 19 and Space Launch Complex 34 at CCAFS (See Figure 1). This facility was constructed in the late 1950's for the Titan I Missile Program, modified in 1964 for the Titan III Program, and further modified in the late 1980's for the Starbird launch vehicles associated with the shuttle Starlab mission. Several Titan I rockets and four or five Titan III rockets were launched from SLC-20. SLC-20 was deactivated in 1996. In addition to launch activities, SLC-20 reportedly served as a drum crushing operation and a waste liquid storage area for an approximate 10-year period from the late 1970's to the late 1980's.



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Legend

- Interim Measure Areas
- Canals
- Roads
- SWMU Boundaries



**Space Launch Complex 20 SWMU 043
 Cape Canaveral Air Force Station**

In accordance with RCRA Section 7004(b), this Statement of Basis summarizes the proposed remedy for CCAFS SLC-20. For detailed information, consult the SLC-20 RFI Report which is available for review at the 45th SW Environmental Management Office (See "How Do You Participate?") or on-line at http://www.mission-support.org/45SW_IRP_EA.

Currently, SLC-20 is being re-activated. New launch facilities are being constructed and will be operated under the direction of the Florida Spaceport Authority for commercial launches. The re-activation includes upgrades to Launch Pad A and the construction of a new building along the perimeter road, northeast of the Blockhouse.

Historically, the Titan Rockets utilized liquid propellants, including hydrazine, nitrogen tetroxide, RP-1, and liquid oxygen. Solvents were used to flush rocket engine components. These and other hazardous materials were stored and used at various locations around SLC-20. During launch operations, thousands of gallons of water per minute were used to suppress vibrations and for cooling purposes. These “deluge” waters were collected in a concrete flumeway and basin before being released to the environment.

It is suspected that the launch stand and other site support structures were painted with coatings that contained PCBs. It is believed that the PCBs helped the paint withstand the extreme temperatures generated at launch time. Deluge basin discharge and dispersion of the paint chips the resulted from sandblasting operations are considered the primary causes of site contamination.

The USAF conducted the following investigations:

- 1990: A Preliminary Assessment including records search, site reconnaissance, and interviews with knowledgeable aerospace personnel identified 17 areas of concerns which warranted further investigation. A Site Investigation (SI) was recommended to collect and analyze the site's environmental media (soil, groundwater, surface water, and sediment) to evaluate the presence or absence of contamination.
- 1995: The SI report concluded that the presence of constituents in soil, groundwater, surface water, and sediment might

pose a risk to human health and the environment. The SI recommended that a RCRA Facility Investigation (RFI) be conducted to assess the nature and extent of the contamination present at the site, and perform risk assessments to determine if the contamination is detrimental to human or ecological health.

- 1995-1996: An Interim Measure (IM) was performed to remove site contamination found in and around the launch pad's concrete deluge flume-way and basin. The clean-up action resulted in the removal of approximately 37 cubic yards (52 tons) of material.
- 1998: An IM was performed to remove site contamination found in other site soils and sediments. The clean-up action resulted in the removal of approximately 644 cubic yards (1,057 tons) of contaminated soils.
- 1998-1999: An RFI was performed, detailing the sampling and analysis of site soil, groundwater, surface water, and sediment. These results were used to determine human health and ecological risks. The Human Health Risk Assessment (HHRA) indicated that potential risk exists from the site soils. The Ecological Risk Assessment (ERA) indicated that no unacceptable ecological risk is present at the site.

SUMMARY OF SITE RISK

As part of the RFI activities, an HHRA and an ERA were conducted to estimate the health and environmental risks associated with the site-specific contamination. The risk assessments were performed in accordance with risk management decision processes established by the USEPA, FDEP, and the USAF at the time the RFI was initiated.

The Chemicals of Concern (COCs) identified for human health during the RFI were:

- Soil: Aroclor 1260

The HHRA demonstrated that groundwater, surface water, and sediment do not pose unacceptable human health risks at SLC-20. Soil was the only medium that demonstrated a potential unacceptable human health risk. The one in one million (1/1,000,000) cancer threshold was exceeded for the hypothetical future child resident. Aroclor 1260 was the primary contributor to that soil cancer risk.

The ERA was conducted to evaluate the possibility that land and aquatic organisms (eco-receptors) may be at risk from site-related contaminants. The ERA was based on laboratory analyses of soil, surface water, and sediment samples. Groundwater was not evaluated in the ERA, as there is no identified exposure pathway.

The ERA concluded that potential risk from the exposure to and/or ingestion of soil, surface water, or sediment by eco-receptors is marginal. Several factors mitigate the potential concern. These could include routine facility operation and maintenance activities, less than optimal habitat found within facility boundaries, the extent of the eco-receptor's normal foraging area, and the seasonal variability associated with the amount of surface water present at any given time.

WHAT ARE THE CLEANUP OBJECTIVES AND LEVELS?

The remedial action objective (RAO) is to protect humans from exposure to soils by preventing residential land use where site contaminant concentrations are higher than regulatory standards. Table 1 lists the COCs present at SLC-20. The first column lists the chemical name, the second column lists the maximum concentration detected in the impacted medium at SLC-20 during the RFI, and the last column presents the clean-up level to be achieved at the site.

TABLE 1—CLEANUP GOALS

Site-Related Chemicals of Concern (COCs)	Maximum Detected Concentration (mg/kg)	Site-Specific Clean-up Level ¹ (mg/kg)
SOIL		
Aroclor-1260	1.3	0.5

¹ Clean-up level represents the most stringent value among USEPA and FDEP criteria at the time of the final investigation.

CLEANUP ALTERNATIVES FOR SLC-20

Clean-up alternatives are different combinations of plans to restrict site use and to contain, remove, and/or treat contamination in order to protect public health and the environment. Only two alternatives were considered because of low levels of contamination present at the SLC-20. The clean-up alternatives considered for the SLC-20 are summarized below.

No Action: Evaluation of the No-Action alternative is used as a basis for comparison with other alternatives. Under this alternative, no remedial action would be taken to reduce human health risks or restrict site use. It was determined this alternative would not attain the RAO.

Land Use Controls: Under this alternative, the base would implement site-specific land use controls to prevent exposure of hypothetical future residents to site soils. The 45th SW, USEPA, and FDEP have entered into a Memorandum of Agreement (MOA), which outlines how land use controls will be managed at the 45th SW. The MOA requires periodic inspections, warning signs, condition certification, construction project coordination, and agency notification. Site specific details can be found in the SLC-20 Land Use Control Implementation Plan (LUCIP).

EVALUATION OF REMEDY ALTERNATIVES

Each cleanup alternative was evaluated to determine how each potential remedy would

comply with the four general standards for corrective measures. The four general standards for corrective measures are:

- Overall protection of human health and the environment;
- Attain media cleanup standards;
- Control the sources of releases; and
- Comply with standards for management of wastes

The second alternative (Land Use Controls) meets each of the above criteria, while the no action alternative remedy would not meet them.

LAND USE CONTROLS AGREEMENT

By separate MOA dated 23 December 1999, with USEPA and FDEP, CCAFS, on behalf of the Department of the Air Force, agreed to implement base-wide, certain periodic site inspection, condition certification, and agency notification procedures designed to ensure the maintenance by installation personnel of any site-specific land use controls deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that through the USAF's substantial good-faith compliance with the procedures called for therein, reasonable assurances would be provided to the USEPA and FDEP as to the permanency of those remedies which included the use specific land use controls.

Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by the USAF, USEPA, and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent on CCAFS's substantial good-faith compliance with the specific land use control maintenance commitments reflected therein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred in may be reconsidered and that additional measures may need to be taken to adequately ensure

necessary future protection of human health and the environment.

WHAT IMPACTS WOULD THE CLEANUP HAVE ON THE LOCAL COMMUNITY?

There would be no impacts to the local community because residential use of the SLC-20 is not occurring nor is it expected in the near future. As long as CCAFS remains an active gateway for the aerospace industry, SLC-20 is expected to continue operating in an industrial capacity.

WHY DOES THE 45th SW IRP TEAM RECOMMEND THIS REMEDY?

The 45th IRP team recommends the proposed remedy because it will provide sufficient and cost efficient safeguards for residential exposures scenarios. Additionally, it will maintain an environment consistent with current usage so there is no significant increase for potential exposure to ecological receptors. The proposed remedy meets the four general standards for corrective measures.

NEXT STEPS

The 45th SW IRP team will review all comments on this SB to determine if the proposed remedy needs modification prior to implementation and prior to incorporating the proposed remedy into the CCAFS HSWA permit. If the proposed remedy is determined to be appropriate for implementation, then the land use controls will be initiated and a LUCIP will be developed and incorporated into the MOA.



LAND USE CONTROL IMPLEMENTATION PLAN

**SPACE LAUNCH COMPLEX 20
SOLID WASTE MANAGEMENT UNIT 43 (SWMU NO. 43)
45TH SPACE WING
CAPE CANAVERAL AIR FORCE STATION
BREVARD COUNTY, FLORIDA**

Facility Description

Space Launch Complex 20 (SLC-20) is located at the northern terminus of the Intercontinental Ballistic Missile (ICBM) Road, between Space Launch Complex 19 (SLC-19) and Space Launch Complex 34 (SLC-34) at Cape Canaveral Air Force Station (CCAFS). This facility was constructed in the late 1950's for the Titan I Missile Program, modified in 1964 for the Titan III Program, and deactivated in 1996. In addition to launch activities, SLC-20 reportedly served as a drum crushing operation and a waste liquid storage area for an approximate 10-year period from the late 1970's to the late 1980's. Construction of new launch facilities for re-activation is currently on-going at SLC-20. The new launch facilities will be operated under the direction of the Florida Spaceport Authority for commercial launches. The re-activation will include upgrades to Launch Pad A and the construction of a new building along the perimeter road to the northeast of the Blockhouse.

Location

(Reference Site Map on last page of this document)

Site Plan Coordinate	Northing	Easting
North	1520458.02	798761.26
West	1519160.44	797417.37
South	1518471.77	798499.57
East	1519187.24	799011.65

Objective

Implementation of site-specific land use controls to prevent exposure of hypothetical future residents to the soil.

LUCIP
SPACE LAUNCH COMPLEX 20 (SWMU NO. 43)
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OCT 2001

Land Use Controls (LUCs) to be Implemented:

Administrative:

- The property will be prohibited from residential or other non-industrial development without prior written notification to Florida Department of Environmental Protection (FDEP) and the United States Environmental Protection Agency (EPA) concerning the SWMU land use change. Dependent on site conditions and the nature and intensity of the proposed land use change, additional site investigations and assessments could be required for the United States Air Force (USAF). Based on these analyses, the potential for additional remedial measures may be required prior to land use change.
- Perform and document baseline LUC audit upon finalization of the Statement of Basis.
- Perform and document quarterly LUC compliance inspections in accordance with 45th SW LUC Operations Manual.
- Perform, document, and report an annual audit on LUC implementation, maintenance, and compliance in accordance with the 45th SW LUC Operations Manual and the current CCAFS Corrective Action Management Plan (CAMP).
- The property Land Use Control Implementation Plan (LUCIP) shall remain in effect until:
 - a) Changes to applicable Federal and State risk-based clean-up standards occur which indicate site contaminants no longer pose potential residential risk; or
 - b) Reduction in site contaminant concentrations to below Federal and State residential risk-based clean-up standards occurs.
- In the event of property realignment, transfer, or re-use for non-industrial or non-commercial purposes, assessment and remediation may be necessary to ensure that impacts to ecological receptors are not increased or to mitigate potential ecological impacts where residual contamination exists.

Soil:

- Soils will not be disturbed or moved during property development, maintenance or construction, without:
 - a) USAF review, coordination, and approval of the proposed construction/development plans via AF Form 103 (Base Civil Engineer Work Clearance Request), 332 (Base Civil Engineer Work Request), 813 (Request for Environmental Impact Analysis), or similar process;
 - b) Ensuring proper engineering controls are in-place so that unauthorized release or disposal of the affected media does not occur. This includes conducting appropriate testing and developing a disposal plan in accordance with the LUC Operations Manual prior to off-site disposal; and
 - c) Use of proper personal protection equipment by site workers, as determined by the project proponent's occupational health and safety advisor.

LUCIP
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- The property will be posted with proper warning signs in accordance with the LUC Operations Manual and the CCAFS Hazardous and Solid Waste Amendments (HSWA) Permit.

Statement of Basis:

The Statement of Basis (SB) is currently being reviewed. It is anticipated that the SB will be accepted/incorporated into the HSWA Permit, scheduled for issuance early in 2002.

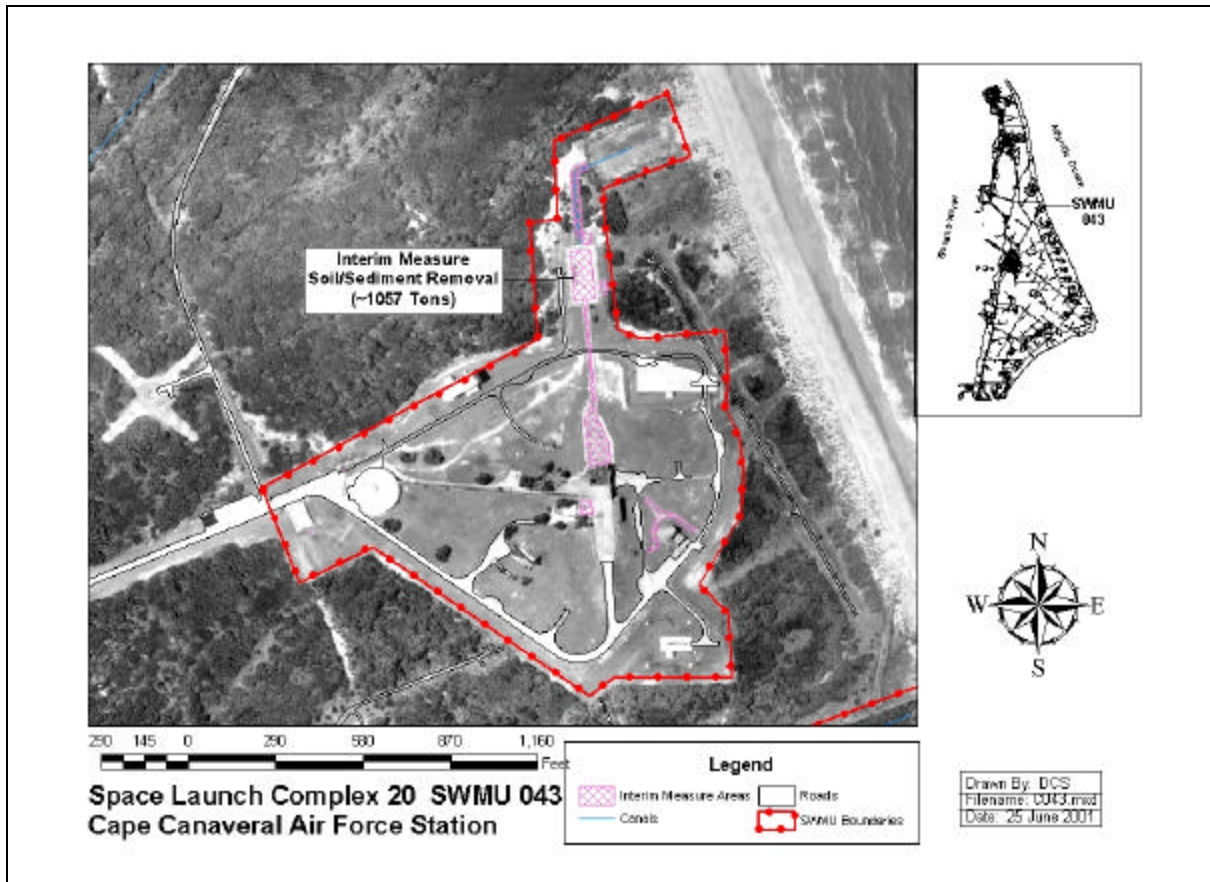
Additional Information:

Pertinent Document Reference:

RCRA Facility Investigation Report, Space Launch Complex 20, SWMU No. 43, Parsons Engineering Science, Inc., August 1999.

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CAPE CANAVERAL AIR FORCE STATION
OCT 2001

Space Launch Complex 20 – Site Map



Please contact the 45 SW Installation Restoration Program Office to obtain additional information, including: the 45 SW Land Use Controls Operation Plan; the CCAFS HSWA Permit; a complete record of corrective actions at SLC-20; or other related documents, guidance, and regulations. The IRP office can be reached by phone at (321) 853-0965. Information can also be obtained via the IRP website at http://www.mission-support.org/45SW_IRP_EA