Engineering Evaluation/
Cost Analysis
Action Memorandum
Former Indian Rocks Gunnery Range
City of Bellair Beach, Florida

USACE Project No. I04FL033701

Prepared for:
U.S. Army Engineering and Support Center, Huntsville

Prepared by:
Environmental Science & Engineering, Inc.
Gainesville, Florida

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List of Acronyms and Abbreviations

ARAR	applicable or relevant and appropriate requirement
ASR	Archive Search Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESAJ	U.S. Army Corps of Engineers, Jacksonville District
CFR	Code of Federal Regulations
DERP	Defense Environmental Restoration Program
DOD	U.S. Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
ESE	Environmental Science & Engineering, Inc.
FDE	Findings and Determination of Eligibility
ft	foot
FUDS	Formerly Used Defense Site
HE	high explosive
HVAR	high velosity aircraft rocket
INPR	Inventory Project Report
IRGR	Indian Rocks Gunnery Range
NCP	National Oil and Hazardous Substances Contingency Plan
OE	ordnance and explosives
OEW	ordnance and explosive waste
OU	operable unit
RAC	risk assessment code
SARA	Superfund Amendments and Reauthorization Act of 1986
USACE	U.S. Army Corps of Engineers
USC	United States Code
WWII	World War II
yd	yard

1.0 Purpose

This document presents the determination of the risk reduction actions that are recommended at the former Indian Rocks Gunnery Range (IRGR). This determination was developed in general accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 USC Section 9601 *et seq.*, and the National Contingency Plan (NCP), 40 CFR Part 300. The selected actions are supported by documents contained in the administrative record established for this site.

2.0 Site Conditions and Background

2.1 Site Conditions and Background

The Indian Rocks Air-to-Ground Gunnery Range (which was part of the IRGR) was used for training by pilots stationed at the Pinellas Army Airfield, which was located at the current site of the St. Petersburg-Clearwater Airport. During its operation, an unknown number of explosive aerial rockets were fired at targets located on land. Many of these rockets missed their targets and landed in the near-shore waters. In addition to rockets, small practice bombs were reportedly dropped on land targets. Records indicate that the land portion of the range was de-dudded (ordnance removed) prior to returning the range to civilian control. Such de-dudding was common practice at that time. No records exist to indicate that such de-dudding occurred in the underwater impact portion of the range.

2.1.0 The anti-aircraft gunnery range (which was part of the IRGR) was used for anti-aircraft gun training by soldiers stationed at Drew Field, which was located at the current site of the Tampa International Airport. Available records indicate that only .50 and .30 caliber rounds were fired from the gun emplacement. No explosive munitions were either used or stored at that location.

2.1.1 Site Evaluation

2.1.1.1 History of Ordnance Exposures

Between 1943 and 1947, the IRGR was actively used for military operations. On January 7, 1947, the lease for the air-to-ground gunnery range was canceled, and on January 25, 1947, the lease for the anti-aircraft gunnery range was also canceled. From site closure to 1972, no written record could be located by the ASR investigation team that noted the discovery of ordnance and explosives (OE) at this location. However, one long-time resident reports ordnance items washing up on shore on a weekly basis after closure of the range. After this initial influx of ordnance, this resident reported that there would be recurrences at approximately 2-year intervals. The items would wash up on the Gulf side beaches generally after storms.

2.1.1.1.1 On June 13, 1972, a small rocket was found about 40 feet (ft) offshore at Belleair Beach. U.S. Air Force explosives experts identified it as a "dud" (exact nature undetermined) World War II (WWII) naval barrage rocket. In 1975, a joint Army/Navy sweep of the offshore area reportedly recovered and detonated a total of 132 ordnance items from the underwater area west of the air-to-ground gunnery range land impact area. Though no official Explosive Ordnance

interviews with EOD personnel conducted at the time reported that the ordnance items were 2.25- and 4.5-inch aircraft rockets. The initial Navy EOD sweep reportedly located 14 rockets, all of which contained high explosive. A more thorough sweep by Navy EOD at the end of August 1975 located at least another 76 rockets. According to newspaper interviews, many of the rockets were found offshore from the central part of the former air-to-ground gunnery range land impact area. The officer in charge of the operation reported to the media that only 4.5-inch rockets were discovered and that many of the rockets were likely fuzed. The underwater sweep was conducted completely by sight. Army EOD destroyed all rockets found and indicated that many had live high explosive (HE) warheads.

2.1.1.1.2 In June 1977, rockets again began appearing off the shores of Belleair Beach. This discovery resulted in requests for assistance from the mayor. However, no official record could be located that reveals the result of such assistance or the number of rockets found, other than the three "4.2-inch rockets" mentioned in the mayor's original request.

2.1.1.1.3 In June 1980, a "bomb" (probably a rocket warhead) was discovered in about 8 ft of water roughly 10 yards (yd) from shore. Shortly thereafter, two more "bombs" were found nearby. A Navy EOD team was again called in and it was reported that eight more "war relics" were found in about 5 ft of water roughly 50 yd from the shore.

2.1.1.1.4 In May 1986, a WWII "practice bomb" was recovered offshore and three to five more were reportedly seen in the area. A Navy EOD sweep of the area reported that "thirteen items and pieces were recovered." Reports from a subsequent Navy EOD visit indicated that additional ordnance was found.

2.1.1.1.5 In January 1993, a practice bomb was unearthed during a road-widening construction project on Gulf Boulevard. It is possible that additional items were also located during this project, but this incident is the only one on record at the supporting area EOD detachment.

2.1.1.2 Preliminary Assessments Conducted

In 1992, a preliminary assessment of IRGR was conducted under the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS) by the U.S. Army Corps of Engineers, Jacksonville District (CESAJ). At that time, the Findings and Determination of Eligibility (FDE), dated September 9, 1992, concluded that 180.30 acres of land at Belleair Beach and Belleair Shores, Florida (Pinellas County), had been formerly leased and used by the War Department (DOD) as the IRGR. The investigation concluded that the site was eligible for

consideration under DERP-FUDS. Because the land had been used by the U.S. Army as a gunnery range, the report recommended an OE project.

2.1.1.2.1 In 1994, an OE archives search report (ASR) was produced by the USACE Rock Island District [U.S. Army Corps of Engineers (USACE, 1994]. This report presents the findings of an historical records search and site inspection for the presence of OE at the former gunnery range. The investigation was also performed under the authority of DERP-FUDS.

2.1.1.2.2 A field investigation conducted by Environmental Science & Engineering (ESE) during production of the Engineering Evaluation/Cost Analysis (EE/CA) completed the necessary site characterization of the site.

2.1.2 Physical Location

According to the ASR for this project (USACE, 1994), IRGR is composed of an air-to-ground gunnery range and an anti-aircraft gunnery range (see Figure 2-1). The ASR subdivided the site into five areas designated as A through E (see Figure 2-2). The impact area for the Indian Rocks Air-to-Ground Gunnery Range (Area A) comprised 178 acres located entirely within the City of Belleair Beach, Florida. The underwater impact area associated with this range (Area C) is from the city boundary west to a distance of about 2,100 ft. The gun emplacement site for the Indian Rocks Anti-Aircraft Gunnery Range (Area B) is comprised of 2.5 acres located entirely in the community of Belleair Shores. The associated impact area for this range (Area D) is a fan-shaped area extending approximately 18,000 ft west from the gun emplacement. A fifth area associated with the two ranges is identified on the 1944 Sectional Aeronautical Chart as a circular "Danger Area" (Area E). This last area was a warning to pilots to stay clear. The gunnery ranges were operated from May 1943 to January 1947. The land for the ranges were leased from a private citizen.

2.1.3 Site Characteristics

The site was no longer used as a gunnery range after 1947. Since that time, it has been used for residential, recreational, and municipal purposes. Most of the land is privately owned, although a few undeveloped lots are owned by the City of Belleair Beach. The submerged lands are owned by the State of Florida.

2.1.3.1 Area A comprises three main land use categories. The area west of Gulf Boulevard to the beach is reserved for multifamily condominiums. The area east of Gulf Boulevard is reserved for single family dwellings. A third land use category is for isolated park areas, owned by the city,

which are reserved for use by its citizens. There is no commercially zoned land or land open to the general public within the City of Belleair Beach. In addition to these uses, specific easements have been designated for roadways and utilities.

2.1.3.2 Single family houses are typically slab-on-grade concrete block or frame construction. Excavation for this type of construction is generally limited to building foundations and trenches for water and sewer lines. Because of recent hurricane flood damage, lots are frequently elevated with imported fill prior to construction. Under these circumstances, excavation for building foundations during construction would be primarily into imported fill rather than native soil.

2.1.3.3 Excavation activity related to the construction of multi-story, multi-unit buildings in the area west of Gulf Boulevard would be deeper than excavations in the single family area. The most significant excavation activity would likely be associated with driving piles for building foundations. Driving piles into OE could possibly result in detonation. However, no such occurrence has ever been reported in the area. The height of the current seawall suggests that the land on which these structures were built had been augmented prior to construction. At the present time, all available land in the multi-unit area is occupied by condominiums or other similar buildings. Future construction activity is likely to be confined to repair, remodeling, and replacement of current structures.

2.1.3.4 The small size (180.30 acres), location, and activities in the area of the former Indian Rocks Air-to-Ground Gunnery Range makes it an unlikely refuge for threatened species. Since nearly all available land within these sites has been developed, there is probably little natural barrier island habitat remaining in this area. No designated shelter for endangered species exists in the immediately adjacent offshore area. The predominant vegetation on the island is residential lawns, decorative shrubbery, and artificially imported trees.

2.1.3.5 The beach areas are narrow to non-existent and are not known as nesting sites for sea turtles. However, sea turtles in transit to nesting sites may be present in the offshore waters. Bottlenose dolphins and other protected species may also be present in these waters. Any activity that may be undertaken in these waters must, therefore, have provisions to protect such species.

2.1.3.6 No risk reduction actions are currently being implemented at the site. Some risk reduction has been achieved recently because of increased public awareness of OE acquired from several public meetings and press coverage that occurred during the EE/CA field investigations.

2.1.4 Exposure to Contamination

No known hazardous substances as defined by section 101(14) of CERCLA are known or suspected at the site.

2.1.4.1 The substances of critical concern at the site include HE, which may be contained in the warheads of rockets, and various incendiary substances that may be found in practice bombs. These substances are relatively stable and unlikely to migrate any substantial distance from the warhead casing or from the bodies of the practice bombs.

2.1.4.2 Area A - Air-to-Ground Gunnery Range Land Impact Area
Since the range closure only a few bombs have been found within the land impact area (Area A). The absence of any significant discovery of explosive ordnance within this area of the range indicates that few items probably remained after the area was de-dudded.

2.1.4.3 During the EE/CA field investigation, a selection of the limited vacant land was surveyed using a magnetometer (metal detector) to determine the location of any buried ferrous metal. A random selection of locations where such metal was detected were excavated. Almost all of the metal was buried at a shallow (less than 1 ft) depth and were identified as construction debris. The only ordnance related item found was the crushed remains of what may have been a fin assembly from a small bomb. The size of the assembly was approximately the same as that used for the practice bombs reportedly used at the range. This investigation confirmed that the total quantity of ordnance remaining within the land impact area is very small.

2.1.4.4 Area B - Anti-Aircraft Gunnery Range Gun Emplacement Area
The ASR concluded that the gun emplacement did not constitute a significant risk to the public since no explosive munitions were either used, stored, or disposed of at that location. It recommended that no further action be taken for this site.

2.1.4.5 Area C - Air-to-Ground Gunnery Range Underwater Impact Area
Since the range closure, numerous unexploded rockets have been found in Area C during several removal actions conducted by military EOD units. The quantity of ordnance recovered by these removal actions was reportedly less with each succeeding action, indicating a significant decline in the total quantity of ordnance present in this area. Some risk to the public probably remains. The risk to the public is greatest within the beach and wading zone since the public could more easily come in direct contact with OE in this area. The risk in the deep water portion of the impact area would be significantly less since the water is too deep for most of the public to come in direct contact with OE.

2.1.4.6 Area D - Anti-Aircraft Gunnery Range Impact Area

The ASR concluded that ordnance was present within this area. However, it identified the ordnance as spent bullets (non-explosive). The risk associated with spent bullets is negligible.

2.1.4.7 Area E - 1943 Sectional Aeronautical Chart "Danger Area"

The ASR stated that no ordnance has been reported in this area. The risk associated with this area should, therefore, be nonexistent.

2.1.5 Site Status

The IRGR is not included in the NPL and is not recommended for inclusion due to the nature and extent of contamination.

2.1.5.1 The EPA Hazard Ranking System was not used during the screening process for this site. In its place, USACE used the Risk Assessment Procedure for Ordnance and Explosive Waste (OEW) developed by USAESCH in accordance with MIL-STD 882C and AR 385-10. The risk assessment code (RAC) is used to prioritize actions at FUDS. The procedure is primarily a screening tool used to determine which sites may require further study and evaluation. The OE risk assessment is based on best available information resulting from records searches, reports of EOD detachment actions, field observations, interviews, and measurements. However, it does not fully address the probability that the public will actually encounter and be injured by OE.

2.1.5.2 The RAC scores and recommended actions are summarized as follows:

- RAC 1 Imminent Hazard - Expedite Inventory Project Report (INPR) - immediately contact USAESCH,
- RAC 2 High priority on completion of INPR - recommend further action by USAESCH,
- RAC 3 Complete INPR - recommend further action by USAESCH,
- RAC 4 Complete INPR - recommend further action by USAESCH, and
- RAC 5 Recommend no further action.

2.1.5.3 Several risk assessments have been conducted for IRGR. In these assessments, the RAC for the entire site was RAC 2. A later assessment assigned the site a RAC 1. The latest and most detailed risk assessment (March 31, 1994), which was included in the ASR, rated the individual investigation areas. The lowest RAC score (highest risk) found in this assessment was RAC 3 for areas A and C. Area D was rated at RAC 4 and Areas B and E were both rated at RAC 5.

2.2 Other Actions to Date

2.2.1 Previous Actions

At least five separate ordnance removal actions have been conducted at the site by military EOD units. All of these actions were conducted in the underwater impact area (Area C). Several hundred ordnance items, many reportedly containing HE fillers, were recovered during these actions. All were disposed of by military EOD either at an offsite range or by underwater detonation offshore within the defined site limits.

2.2.2 Current Actions

During the EE/CA process, considerable effort has been given to make the public aware of the hazards associated with contact with OE at the site. These efforts have included interviews with media representatives conducted by CESAJ and USAESCH personnel. In addition to these interviews, several public presentations were made to inform governmental officials and the public of the field work that was conducted and the investigation results.

2.3 Role of State and Local Authorities

2.3.1 State and Local Actions to Date

All of the removal actions performed to date have been requested by the local government. Neither the state nor local governments have undertaken any formal action to assess the extent of ordnance contamination. Local authorities are fully familiar with the nature of the contamination and with the proper procedures for obtaining military EOD assistance in removal of ordnance items found within their jurisdiction.

2.3.2 Potential for Continued State/Local Response

Local authorities have provided assistance during past removal actions and can be expected to provide similar assistance during any future actions. These authorities have agreed to participate in the distribution of public information materials when they are produced. State agencies have similarly cooperated, particularly when related to protecting threatened and/or endangered species. These agencies are also expected to provide assistance during any future actions. Due to the nature of the contamination, both state and local authorities are limited in the actions that they can take.

3.0 Threats to Public Health, Welfare, or the Environment

3.1 Threats to Public Health or Welfare

The primary mechanism for the migration of ordnance items at the site has and will continue to be wave action within the underwater impact area of the air-to-ground gunnery range. Such migration is greatest during violent surf conditions that result from strong storms in the Gulf of Mexico (e.g., hurricanes and tropical storms). Under normal surf conditions, migration of the ordnance items is probably minimal.

3.1.1 The appearance of ordnance items at or near the shoreline has declined steadily since the range was closed. This decline is due to the fact that there was a finite number of items at the time of closure and a continual process of removal has occurred.

3.1.2 The primary hazard associated with ordnance is from the accidental detonation of the item rather than any potential toxic effect of the explosive or incendiary substances. The ordnance items identified in the area will not detonate unless subjected to an external force. Public or environment exposure to ordnance items occurs by unearthing the item either by natural forces or excavation by human activities. Once uncovered, contact with the explosive item may cause detonation. Fragmentation data indicate that damage to people and property from the detonation of a 5-inch high velosity aircraft rocket (HVAR) rocket (the largest explosive item known to have been fired at the impact area) could extend several thousand feet.

3.2 Threats to the Environment

Explosive detonation of an ordnance item in the submerged portion of the site could cause destruction of threatened or endangered species such as bottle-nose dolphins and sea turtles or to undersea vegetation. The likelihood of a spontaneous detonation is very small. Such detonation is most likely to occur if the item is disturbed by divers, waders (in shallow water), or during a removal action.

4.0 Endangerment Determination

Actual or potential exposure to ordnance and explosives at this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health or welfare or to the environment.

5.0 Proposed Actions and Estimated Costs

Six areas [operable units (OUs)] were defined within the former IRGR (a FUDS) during the EE/CA process to assist in evaluating the risk presented by ordnance that may remain after facility closure. These OUs were as follows:

- OU-A - Indian Rocks Air-to-Ground Gunnery Range Land Impact Area
- OU-B - Indian Rocks Anti-Aircraft Gunnery Range Gun Emplacement
- OU-C1 - Indian Rocks Air-to-Ground Gunnery Range Underwater Impact Area - Beach and Wading Zone
- OU-C2 - Air-to-Ground Gunnery Range Underwater Impact Area - Deep Zone
- OU-D - Indian Rocks Anti-Aircraft Gunnery Range Underwater Impact Area
- OU-E - 1944 Aeronautical Section Map Danger Zone

5.0 1 Figure 5-1 shows the location of these OUs.

5.1 Proposed Risk Reduction Alternative

5.1.1 Proposed Risk Reduction Alternatives Description and Selection Rationale

5.1.1.1 Operable Unit OU-A - Former Air-to-Ground Gunnery Range Impact Area
Alternative 2, Community Awareness is the proposed alternative for this unit. This alternative was selected based on the following rationale:

- Most if not all of the ordnance found has been practice bombs, which constitute a low risk to the public even if the spotting charge is intact.
- No injuries from exposure to OE have ever been reported at IRGR.
- OU-A was probably de-dudded prior to the range being returned to its civilian owner.
- Community Awareness is an appropriate alternative where the risk to the public has been documented as low and can be managed without actual removal of OE.
- The education/information program is administratively feasible.
- The education/information program would be easily implemented.
- The education/information program is technically feasible.
- This alternative minimizes the likelihood that members of the public would handle OE that they might observe.
- The local community has indicated that it will accept this alternative since no negative comments were received during the public comment period;
- This alternative is cost effective.
- Community Awareness in the form of public education can serve as an effective alternative to other removal activities at the former range.

- Although it is possible that OE exists within the unit (and the effectiveness of this alternative in reducing risk is less than the surface clearance or clearance for use alternatives), the risk of encountering these materials is low unless intrusive activities are conducted. If OE is encountered during these activities, removal and treatment will be by military EOD personnel coordinated through local authorities.

5.1.1.2 Operable Unit OU-B - Former Anti-Aircraft Gunnery Range Gun Emplacement Area

Alternative 1, No Further Action, is the proposed alternative at the Former Anti-Aircraft Gunnery Range Gun Emplacement Area. This alternative was selected based on the following rationale:

- The ASR completed by the USACE, Rock Island District in April 1994 concluded that there was no evidence that explosive munitions were either used or disposed of at the gun emplacement (Area B).
- In the *Risk Assessment Procedure for Ordnance and Explosive Waste Sites* completed by USACE in 1994, Area B received a RAC score of 5, which recommends no further action.
- Since the ASR assessment, no additional information has been developed that would indicate the presence of OE.
- Although it is likely that explosive ordnance may have been stored in this area, it is unlikely that the area was used for explosive ordnance disposal.

5.1.1.3 Operable Unit OU-C1 - Former Air-to-Ground Gunnery Range Underwater Impact Area - Beach and Wading Zone

Alternative 2, Community Awareness, is the proposed alternative for this portion of the underwater impact area. This alternative was selected based on the following rationale:

- No injuries from exposure to OE have ever been reported at the IRGR.
- Surface clearances have been performed by military EOD units on at least 5 occasions. Reports of these clearances indicate that the amount of OE within this unit has declined significantly since range closure.
- Community Awareness is an appropriate alternative where the risk to the public has been documented as low and can be managed without actual removal of OE.
- The education/information program is administratively feasible.
- The education/information program would be easily implemented.
- The education/information program is technically feasible.
- This alternative minimizes the likelihood that members of the public would handle OE that they might observe.
- The local community has indicated that it will accept this alternative since no negative comments were received during the public comment period;

- This alternative is cost effective.
- Community Awareness in the form of public education can serve as an effective alternative to other removal activities at the former range.
- Although it is possible that OE exists within the unit (and the effectiveness of this alternative in reducing risk is less than the surface clearance or clearance for use alternatives), the risk of encountering these materials is low unless intrusive activities are conducted. If OE is encountered during these activities, removal and treatment will be by military EOD personnel coordinated through local authorities.

5.1.1.4 Operable Unit OU-C2 - Former Air-to-Ground Gunnery Range Underwater Impact Area - Deep Zone

Alternative 2, Community Awareness is the proposed alternative for this portion of the underwater impact area. This alternative was selected based on the following rationale:

- No injuries from exposure to OE have ever been reported at IRGR.
- Surface clearances have been performed by military EOD units on at least 5 occasions. Reports of these clearances indicate that the amount of OE within this unit has declined significantly since range closure.
- Community Awareness is an appropriate alternative where the risk to the public has been documented as low and can be managed without actual removal of OE.
- The education/information program is administratively feasible.
- The education/information program would be easily implemented.
- The education/information program is technically feasible.
- This alternative minimizes the likelihood that members of the public would handle OE that they might observe.
- It is expected that the local community will accept this alternative.
- This alternative is cost effective.
- Community Awareness in the form of public education can serve as an effective alternative to other removal activities at the former range.
- Although it is possible that OE exists within the unit (and the effectiveness of this alternative in reducing risk is less than the surface clearance or clearance for use alternatives), the risk of encountering these materials is low unless intrusive activities are undertaken.

5.1.1.5 Operable Unit OU-D - Former Anti-Aircraft Gunnery Range Underwater Impact Area

Alternative 1, No Further Action, is the proposed alternative at the Former Anti-Aircraft Gunnery Range Underwater Impact Area. This alternative was selected based on the following rationale:

- The ASR completed by the USACE, Rock Island District in April 1994 concluded that the only munitions that would be expected in this area are nonexplosive bullets. While these bullets are considered OE, they represent minimal, if any, risk to the public.
- Although in the *Risk Assessment Procedure for Ordnance and Explosive Waste Sites* completed by USACE in 1994, Area D received a RAC score of 4 recommending follow up action, the score was based on the assumption that the spent bullets which would be expected represented a finite risk to the public. The presence of these bullets constitute too low a risk to warrant any further action.
- Since the ASR assessment, no additional information has been developed that would indicate the presence of OE.
- This area was designated at a danger area strictly to keep aircraft away from range during its active use.

5.1.1.6 Operable Unit OU-E - 1944 Aeronautical Chart Danger Area

Alternative 1, No Further Action, is the proposed alternative for the 1944 Aeronautical Chart Danger Area. This alternative was selected based on the following rationale:

- The ASR completed by the USACE, Rock Island District in April 1994 concluded that there was no evidence that explosive munitions were either used or disposed of in this area.
- In the *Risk Assessment Procedure for Ordnance and Explosive Waste Sites* completed by USACE in 1994, Area E received a RAC score of 5, which recommends no further action.
- Since the ASR assessment, no additional information has been developed that would indicate the presence of OE.

5.1.2 Contribution to Long-Term Risk Reduction

Implementing the Community Awareness risk reduction alternative would make the public aware of precautions to take associated with construction activities and reduce the possibility of their exposure to OE.

5.1.3 Description of Risk Reduction Alternatives

Alternatives to reduce the risk of public exposure were considered for each OU. Alternatives included in the EE/CA process were as follows:

- Alternative 1 - No Further Action,
- Alternative 2 - Community Awareness,
- Alternative 3 - Surface Clearance, and

- Alternative 4 - Clearance for Use.

5.1.3.1 The *No Further Action* alternative would mean that no action will be implemented to reduce risk of public exposure. *Community Awareness* would provide warnings by posting signs and by educating the public through media such as notices, brochures, and newspaper articles. *Surface Clearance* would involve removing OE visible on the land surface, the beach, and the sea floor and all such items that may be submerged but protrude through the surface. *Clearance for Use* consists of removal of OE to the maximum depth that future intrusive activities would penetrate. In most cases, this depth would be 2 to 3 ft. Deeper excavation may also be considered when deemed appropriate (e.g., it is known that a building is to be constructed with foundations extending deeper than the clearance depth).

5.1.4 EE/CA

A report describing the EE/CA was produced and has been included in the Administrative Record for this project. Copies of the draft document were placed on file at a repository established at the Largo, Florida Public Library for the public to review existing project documentation. This repository contains documentation for the project so the public can stay informed of the investigation and the remedial actions proposed for the former range. During several public presentations, the public was encouraged to visit the repository and examine the records placed on file at that location. During the public comment period, a public meeting was held to allow the public an opportunity to ask questions or comment on any aspect of the project.

5.1.5 Applicable or Relevant and Appropriate Requirements (ARARs)

5.1.5.1 Assessment of ARARs

ARARs are "those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal environmental, state environmental, or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site" [40 Code of Federal Regulations (CFR) 300.5].

5.1.5.1.1 ARAR selection depends on the hazardous substances present at the site, site characteristics and location, and the specific actions selected for a remedy. Therefore, these requirements may be chemical-, location-, or action-specific. Chemical-specific ARARs are health- or risk-based concentration limits set for specific hazardous substances, pollutants, or contaminants. Location-specific ARARs address circumstances such as the presence of endangered

species on the site or the location of the site within a 100-year floodplain. Action-specific ARARs control or restrict particular types of remedial actions selected as alternatives for site cleanup.

5.1.5.1.2 There are no chemical-specific ARARs applicable for the remediation of sites contaminated with OE. Location- and action-specific ARARs potentially applicable for the remediation of the IRGR are presented in Table 5-1.

5.1.6 Project Schedule

Implementing the recommended risk reduction alternative should proceed as soon as funds can be allocated. No significant obstacles to the full implementation of the alternatives currently exist or are expected in the future.

5.2 Estimated Costs

Alternative 2, Community Awareness was selected as the recommended risk reduction alternative for OU-A, OU-C1, and OU-C2. The cost of implementing this alternative is estimated at $21,219. Alternative 1, No Further Action is recommended for OU-B, OU-D, and OU-E. The cost to implement this alternative is zero.

6.0 Expected Change in the Situation Should Action Be Delayed or Not Taken

Delay in informing the public of the risks associated with contact with OE at the site may result in accidental detonation of an ordnance item that may be found by a resident of the area or a visitor.

7.0 Outstanding Policy Issues

No outstanding policy issues have been developed.

8.0 Enforcement

Not applicable.

9.0 Recommendation

This decision document represents the selected risk reduction alternative for the IRGR site, in Pinellas County, Florida, developed in general accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the site.

9.0.1 Conditions at the site meet the NCP section 300.415(b)(2) criteria for implementation of risk reduction alternatives and I recommend approval of the proposed alternative.

Terry L. Rice
Colonel, U.S. Army
District Engineer

Date

References

U.S. Army Corps of Engineers (USACE), Rock Island District, 1994. Ordnance and Explosive Waste Archive Search Report for the Former Indian Rocks Gunnery Range, April 1994.

Tables

Table 5-1. Potential ARARs for the Removal Actions

Activity	ARAR	Citation	Applicability or Relevance
Action-Specific			
Excavation	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	40 CFR 264	Establishes minimum standards that define the acceptable management of hazardous waste for owners and operators of facilities that treat, store, or dispose of hazardous waste.
	Standards Applicable to Generators of Hazardous Waste	40 CFR 262	Establishes standards for generators of hazardous waste. Applicable to remedial alternatives involving landfilling of hazardous soil and debris.
	Coastal Construction and Excavation	FAC 16B-33	Establishes standards for excavation and Florida Statutes Ch. 161 construction in a coastal zone for the preservation of beaches. Applicable to alternatives involving excavation, treatment, and disposal of hazardous waste.
Waste classification	Identification and Listing of Hazardous Waste	40 CFR 261	Provides for proper classification of wastes under RCRA guidelines.
Treatment	National Primary and Secondary Ambient Air Quality Standards	40 CFR 50	Establishes ambient air quality standards for particulate matter, sulfur dioxides, carbon monoxide, ozone, nitrogen dioxide, and lead.
	National Emission Standards for Hazardous Air Pollutants	40 CFR 61	Provides a list of substances designated as hazardous air pollutants. Regulations apply to potential emissions from treatment, or other operations, of any hazardous air pollutant for which a standard is prescribed under this part.
Disposal of wastes and treatment residues	RCRA and State of Florida Land Disposal Restrictions	40 CFR 241 40 CFR 268 and FAC 62 730.183	Land disposal restrictions may be triggered if excavated soils or treatment residuals exhibit RCRA hazardous waste characteristics.

Table 5-1. Potential ARARs for the Removal Actions (Continued, Page 2 of 3)

Activity	ARAR	Citation	Applicability or Relevance
	Criteria for Classification of Solid Waste Disposal Facilities and Practices	40 CFR 257 FAC 62-701	Establishes criteria for use in determining that solid waste disposal facilities and practices pose a reasonable probability of adverse effects on health or the environment.
Worker safety	Occupational Safety and Health Act (OSHA)	29 USC ss. 651-678	Provides workers with personal protection equipment during all remediation phases. Provides adequate protection to the community by reducing dust potentially generated during material excavation and handling activities.
Coastal operations	Coastal and Marine Environments	43 CFR 11.41 FAC 62-600.5200	Provides an assessment process involving field observation to determine injury and determine damages in coastal and marine environments resulting from a discharge or release.
Ocean Dumping	Ocean Dumping Permits	40 CFR 223 Section 104 (d), 40 CFR 221	Establishes criteria for permits; revision,, revocation or limitation of ocean dumping under Section 104(d) of the Act
	U.S. Army Corps of Engineers Permit Regulations for Ocean Dumping	33 CFR 324	Establishes regulations for issuance of permits for ocean dumping.
Location-Specific			
Presence of endangered or threatened species or critical habitat of such species as designated in 50 CFR 17, 50 CFR 226, or 50 CFR 227	Endangered Species Act of 1973 as Amended (Latest Amendment June 1986)	50 CFR 402 40 CFR 6.302(h) FAC 62B-41.002(16)	Actions that jeopardize species/habitat must be avoided or appropriate mitigation measures taken. Offsite actions that affect species/habitat require consultation with DOI, FWS, NMFS, and/or state agencies, as appropriate, to ensure that proposed actions do not jeopardize the continued existence of the species or adversely modify or destroy critical habitat. Consultation with the responsible agency is also strongly recommended for onsite actions.

Table 5-1. Potential ARARs for the Removal Actions (Continued, Page 3 of 3)

Activity	ARAR	Citation	Applicability or Relevance
Presence of state-designated endangered species, threatened species, or species of special concern	Rules Relating to Endangered or Threatened Species; General Prohibition; Permits	FAC 39-27.002	Actions should be avoided that would impair the management of protected species populations designed to increase the designated species to the point that they are no longer endangered or threatened.
Archaeology	Rules Relating to the Protection of Areas of Archaeological Significance	36 CFR 800	Actions should be avoided that have adverse impacts on areas of archaeological significance.

Note: Excavation and material handling operations will be conducted in accordance with the OE safety specifications described in the USAESCH *Safety Concepts and Basic Considerations for Unexploded Explosive Ordnance (UXO) Operations (revised 16 Dec 92).*

CFR = Code of Federal Regulations.
DOI = Department of Interior.
USFWS = U.S. Fish and Wildlife Service.
NMFS = National Marine Fisheries Service.
NPDES = National Pollutant Discharge Elimination System.
RCRA = Resource Conservation and Recovery Act.
USC = United States Code.
FAC = Florida Administrative Code.

Source: ESE.

Figures

Figure 2-1
PROJECT LOCATION MAP

SOURCE: ESE.

INDIAN ROCKS AIR-TO-GROUND GUNNERY RANGE

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE DIVISION

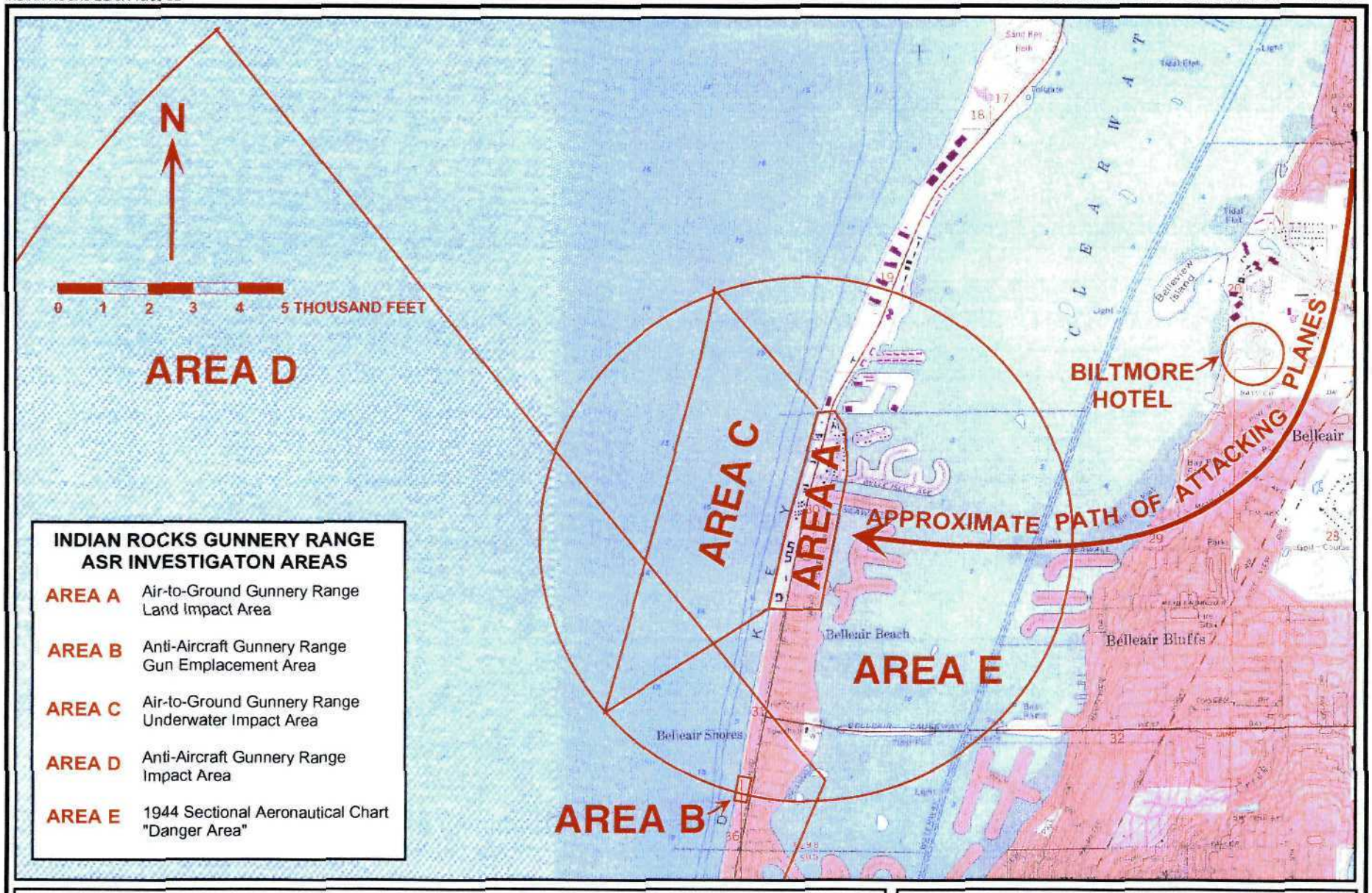

Figure 2-2
ASR INVESTIGATION AREAS

SOURCES: USGS, 1974; USACE, 1994; ESE.

INDIAN ROCKS AIR-TO-GROUND GUNNERY RANGE

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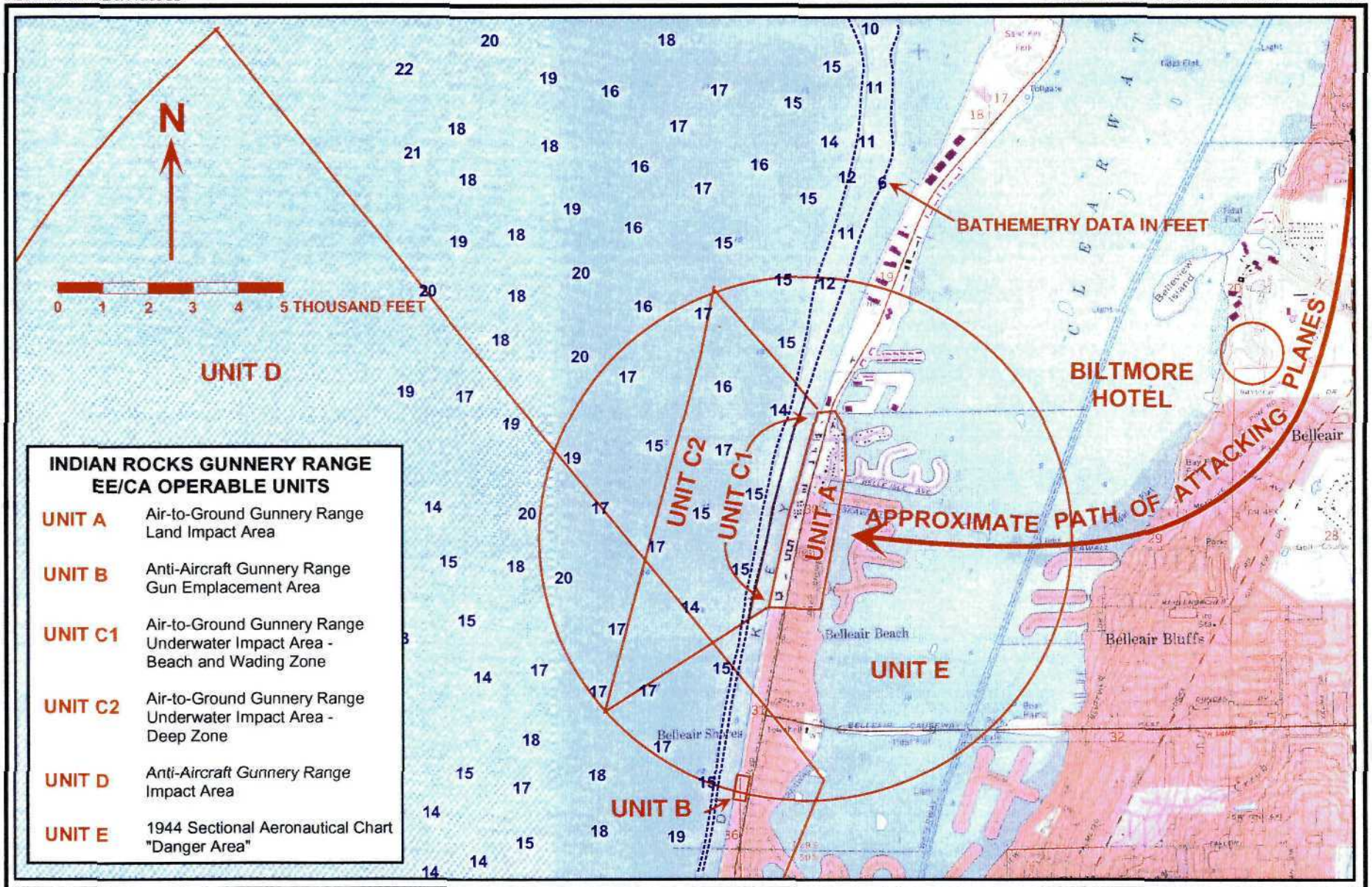

Figure 5-1
EE/CA OPERABLE UNITS

SOURCES: USGS, 1974; USACE, 1994; ESE.

INDIAN ROCKS AIR-TO-GROUND GUNNERY RANGE

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