



USA Environmental, Inc.
A Small Business • Munitions Response Services

*Professionalism
Responsiveness
Cost Effectiveness*

Mission & Capabilities

www.usatampa.com

USA Environmental, Inc. (USAE) provides characterization, remediation and disposal of Munitions and Explosives of Concern (MEC), Unexploded Ordnance (UXO), and Hazardous, Toxic, Radioactive Waste (HTRW). Incorporated in 1998 and headquartered in Oldsmar (NW of Tampa), Florida, USAE is a **full-service, small business environmental remediation and munitions response provider** to government and private sector clients worldwide. **The USAE Mission** is to safely deliver all munitions response and environmental services, any-time, anywhere, with cost effective and innovative solutions for the benefit of our clients, stakeholders, and the communities we serve.

USAE Environmental Capabilities



Munitions Response Services
MEC Characterization, Remediation,
Disposal



**Operational Range
Clearance/Maintenance**
Debris Removal, Target Replacement,
Small Arms Range Refurbishment



Geophysical Services
DAGCAP Accredited, Advanced
Geophysical Classification (AGC),
Digital Geophysical Mapping (DGM)



Underwater MEC Services
UXO Dive Teams, Underwater AGC
and DGM, Remotely Operated
Vehicles (ROV)



Environmental Remediation
Building characterization, remedia-
tion, demolition; AFFF Replacement,
Transport & Disposal



Construction Support
On Call / On Site MEC Avoidance
for Cultural, Biological Surveys,
In-ground & Horizontal Construction



Innovative Technologies
Innovative Methods & Advanced
Technologies, e.g., X-Ray, (shown)
for Effective MEC Field Operations



Community Education
Field Training & Outreach
Using the 3Rs Method:
Recognize, Retreat, Report

Corporate Overview

We provide services to locate, identify, remove, and dispose of MEC using the latest technologies available to achieve the highest levels of safety, cost effectiveness, and quality. USAE's capabilities are applied at former military sites as part of the characterization and remediation process, within active military ranges that require operational clearances and maintenance, or at private locations where MEC has lain dormant until encountered during intrusive activities. USAE performs environmental remediation under NAICS 562910.

Over the past 25 years of safe, successful project execution, USAE has performed more than 7 million project hours during nearly 2,000 separate projects valued at \$854M as both a prime contractor and a subcontractor at project sites located throughout the world.

DAGCAP Accredited, USAE employs more than 158 multi-disciplinary subject matter experts well-versed in the plan-

ning and operations related to the completion of MEC and HTRW projects. USAE's environmental/engineering-focused professionals include program managers, project managers, all UXO-related labor categories, field supervisors, safety and health professionals, quality managers, UXO qualified divers, geophysicists, and global logistics experts. Our depth of personnel address all phases of MEC, HTRW and Operational Range services at multiple project sites simultaneously, regardless of geographic location.

USAE effectively applies its comprehensive Corporate Safety and Quality Control Program to every project. This attention to quality work and safety has led to an average Experience Modification Rate (EMR) of 0.87 over the last five years.

USAE has a DCAA-audited and approved Enterprise Resource Planning (ERP) system which covers our Accounting, Billing, Contracts Management, and Payroll Systems.



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Recent Key Prime Contracts

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Aqueous Film Forming Foam Support Services MATOC (AFFF UR)

(Awarded 2023) *U.S. Army Engineering & Support Center, Huntsville*

Chemical, Environmental and Munitions Response – UR (ChEM-RU)

(Awarded 2021) *U.S. Army Engineering & Support Center, Huntsville*

Emerging Environmental Requirements Acquisition (EERA)

(Awarded 2021) *U.S. Army Engineering & Support Center, Huntsville*

Environmental Remedial Action, Small Business (SATOC)

(Awarded 2020) *NAVFAC Atlantic*

Environmental Remediation Services (ERS) w/MMRP (SB & UR MATOCs)

(Awarded 2019 and 2021) *USACE, Omaha District*

**Munitions Response Actions (SATOC) on Vieques, Puerto Rico
and Other Sites in NAVFAC's AOR and Worldwide (3 Contracts)**

(Awarded 2022, 2017 and 2010) *NAVFAC Atlantic*

Multiple Environmental Government Acquisition (UR MEGA MATOC)

(Awarded 2016) *U.S. Army Corps of Engineers, Huntsville Center*

**Former Sunflower Army Ammunition Plant, Explosive
Decontamination and Removal of Outside Sewer Lines (2 Contracts)**

(Awarded 2019 and 2016) *USACE Kansas City District*

Range Sust. and Rem. Env. Multiple Award Contract (RSR EMAC II & III)

(Awarded 2016 and 2022) *NAVFAC Southwest*

Worldwide Environmental Remediation Services (WERS)

(Awarded 2010) *U.S. Army Corps of Engineers, Huntsville Center*

**International Remediation and Environmental Services (IRES)
Multiple Award Task Order Contract (MATOC)**

(Awarded 2017) *U.S. Army Corps of Engineers, Huntsville Center*

**Munitions Response Actions, Range Sustainment;
Environmental Compliance and Remediation Services (MRRSRE)
CONUS and OCONUS (MATOC)**

(Awarded 2017) *NAVFAC Pacific*

Munitions Response Contract (MRC)

(Completed 2015) *NAVFAC Pacific*

Range Sustainment, MMR, Env. Compliance & Rem. Services (RS2)

(Awarded 2012) *NAVFAC Atlantic*



Contact Information

Cage Code:1A9P1

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Safety is Our #1 Priority

USAE's Corporate Safety and Health Program is developed, managed and executed by USAE's Corporate Quality and Safety Management, our Certified Safety Professionals, and Field Quality and Safety Officers. The program ensures that formalized safety procedures and practices are employed consistently across all programs and projects.

Our safety professionals possess a thorough understanding of the OSHA, DoD, USACE, NAVFAC regulations and safety standards. USAE's open-door policy empowers all employees to stop work in order to voice safety concerns or issues.

Since 1998, USAE has safely performed thousands of MMRP/ HTRW projects in terrestrial and aquatic environments worldwide. Our high-risk munitions response work requires a deeply rooted respect for the health and wellness of all project personnel.

USAE's highly effective Safety Management System (SMS) requires participation at all levels of management, leadership, and employees to achieve a proactive culture of safety. The SMS is based on USAE's active involvement with the Florida OSHA to achieve the OSHA Safety and Health Achievement Recognition Program (SHARP) designation.

Core Value: "Safety and Health"

USAE initiates and implements our comprehensive, effective and dynamic Corporate Safety and Health Program; embedded in our culture and required by our subcontractors.

To reward and recognize field and corporate employees who demonstrate a commitment to worksite safety analysis, hazard prevention and control, and implement innovative practices, USAE awards Safety Stars, with dozens awarded to date.



From daily safety briefings at every job site by our UXOSOs and SSHOs, to monthly safety topics and wellness topics distributed company-wide, all personnel (corporate to project to subcontractor) are successfully integrated into our safety program. This results in greater buy-in of our safety program – demonstrated by >7 million project hours and our average EMR of 0.87 over the last 5 years — this is how our culture of safety is ingrained. It is USAE's goal to be an exemplary model of safety and health in our industry.

Quality Management System (QMS)

The foundation of our Quality Management System is our Quality Management Plan (QMP), which defines quality procedures and integrates planning, assessment, and enforcement to ensure compliance with customer requirements, and continual improvement of our performance across all projects.



Led by USAE's Corporate Quality Manager (CQM), an American Society of Quality (ASQ) Certified Manager of Quality/Organizational Excellence (CMQ/OE), the CQM is responsible and accountable for implementing, reviewing, and updating the QMP and monitoring the overall QMS.

USAE employs ASQ Certified Quality Auditors (CQA) with training in ISO 17025:2017 Internal Auditing.

All program and field quality staff have the authority to stop work for any adverse quality issues. Our program follows ISO 9001 guidance and meets all DoD requirements.

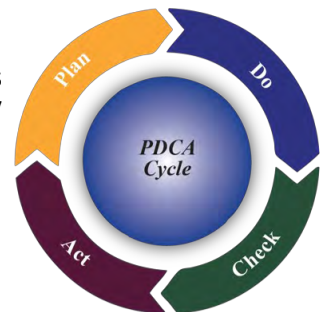
The USAE QMS incorporates the **Plan, Do, Check, Act** process of continual improvement.

Core Value: "QMS"

USAE achieves maximum accuracy by ensuring long-term improvement to our QMS by strengthening employee awareness of, and encouraging creative suggestions for, process improvement.

Key Quality Principles we incorporate into our quality plans and programs include:

- ◆ Focus to exceed customer expectations;
- ◆ Create productive environments for employees to pursue quality objectives;
- ◆ Recognize, empower and enhance the competence of our employees;
- ◆ Develop processes that produce consistent and predictable results;
- ◆ Continuously improve to streamline root-cause investigations;
- ◆ Base decisions on analysis and evaluation of data to minimize risk.





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Munitions Response Services

Providing munitions response services since 1998, USAE is an industry leader performing MEC/UXO characterization, assessment and removal to develop the safest, most cost effective response alternatives to reduce human risks associated with MEC and munitions constituents (MC).

We have the full capability to safely locate, identify, recover, manage, and dispose of all forms of MEC including Material Potentially Presenting an Explosive Hazard (MPPEH), Munitions Debris (MD), and Range-Related Debris (RRD).

Performing MEC Response worldwide, USAE excels at ensuring the safety of our personnel, working in logistically challenging environments, and employing the best technologies — all to achieve the highest quality results to exceed our customers expectations.

USAE's worldwide capability and experience includes Hawaii, Alaska, Puerto Rico, Virgin Islands, Iraq, Guam, Tinian, Japan, Italy, South Korea, Philippines, and Canada.

USAE's myriad of customers include Dept of Defense entities (USACE, NAVFAC, Marine Corps, Air Force), support active installations, and many commercial and private developers. We have extensive experience working within all phases of regulatory requirements for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) programs.

To support worldwide MEC response, USAE staffs and maintains an comprehensive inventory of specialized equipment at our 4,500-sq ft warehouse near our Corporate Office.

We consistently use and verify an extensive network of logistics providers who rapidly and effectively deploy significant resources.

Our Munitions Response capabilities also include:

- Safely locate, identify, and characterize MEC on the ground surface, subsurface, and underwater
- MEC clearance and removal
- Disposal of MEC/MPPEH/MD/MDAS
- MC Investigation & Remediation
- Construction Support, as MEC Avoidance during horizontal/vertical construction, cultural, and biological surveys.

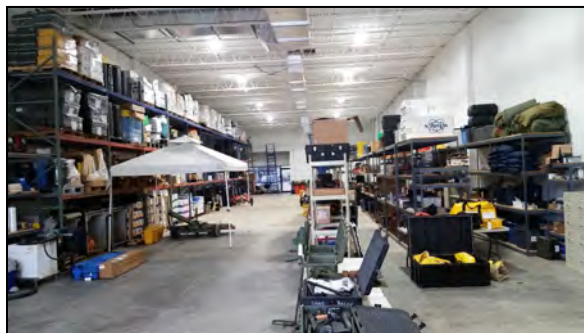
**81mm & 60mm
Mortars**



**UXO Team
with Analog
Sensors
Performing a
Clearance**



**Field Personnel
Entering Real-Time Data into
Custom Data Forms on a
Ruggedized Tablet**



**USAE's 4,500
square foot
warehouse**

**Accurate Determination of Live or Practice Bombs, Mortars, and
Projectiles Makes for Safe and Efficient MEC Operations**

Practice Bombs



Projectiles



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Geophysical Services

USAE employs an experienced geophysical team that provides full service environmental and munitions response services to include advanced geophysical classification (AGC) capabilities.



USAE is one of a select group of firms addressing potential explosives safety risks at munitions response sites (MRSs). Accredited by the ANSI National Accreditation Board (ANAB) to perform AGC under the Dept. of Defense (DoD) Advanced Geophysical Classification Accreditation Program (DAGCAP) since December 2018, USAE successfully renews this accreditation as a small business geophysical provider through annual and biennial audits. Through DAGCAP, we utilize our Quality Management System, which is based on the requirements of ISO/IEC 17025 and perform surveys in accordance with DoD Quality Systems

Requirements for AGC to provide the highest quality data results, cost savings, and accountability to our clients.

As a member of the Environmental and Engineering Geophysical Society (EEGS), USAE's team of geophysicists participates in extensive training to stay current with industry standards and trends. In addition to AGC, USAE utilizes state-of-the-art geophysical equipment, to include the newest suite of EMI-based advanced geophysical sensors, and when paired with both proven and cutting-edge positioning systems, provides exceptional data collection and remediation results.

Experience and Quality

USAE performs terrestrial and underwater geophysical surveys. The application of AGC and existing Digital Geophysical Mapping (DGM) technology, paired with our extensive munitions response experience, allows our team to design innovative characterization and remediation solutions to support any project's scope of work – from site investigations to removal actions.

By maintaining a high level of technological capabilities and skills, USAE is committed to industry trend exploration in scientific and technology solutions to continually improve our value to our customers.

USAE has performed nearly a thousand geophysical surveys for government and private customers in all types of diverse locations and terrain worldwide, to include Puerto Rico, Guam, Tinian, South Korea, Philippines and throughout the United States, including Alaska and Hawaii.

NAVFAC Pacific rated USAE *Exceptional* and *Very Good* for our use of AGC to reduce the minimum separation distance (MSD) required during construction of proposed MILCON in Guam.

Upon the successful completion of a munitions assessment and removal at a former Naval Air Station's skeet range and quarry at Brunswick, ME, NAVFAC rated USAE *Exceptional* for regulatory compliance. This investigation included DGM and statistical evaluations to assess potential munitions concerns. *"The fieldwork and quality controls for this project were of excellent quality. The USAE Team provided excellent technical consultation support intended to explain the results of the fieldwork conducted as part of this contract."*

For a U.S. Army Corps of Engineers (USACE) Remedial Action at the >209-acre former Motlow Range Complex, a challenging, heavily wooded site, USAE performed extensive DGM and AGC. The surveys resulted in a significant reduction (>82%) in the number of Targets of Interest requiring intrusive investigation. USACE rated USAE *Very Good* for Quality and Management.

Core Value: "Technology"

Dedicated to proper application of technologies, maintaining a high level of skill and capabilities, and exploring world-wide scientific solutions to continually improve our value to our customers.



Performing dynamic survey using the Geometrics, Inc., Metal Mapper 2x2 AGC Sensor, Puerto Rico



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Geophysical Services (cont.)

Efficiency of a One-Pass AGC Survey

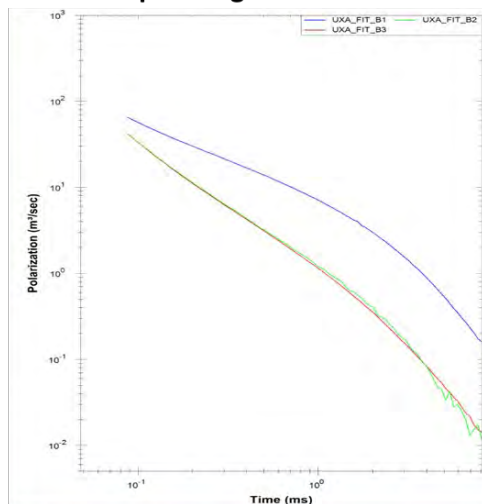
Reduce Cost by Detection and Classification of UXO in One Step
(AGC Can Result in >80% Reduction in Intrusive Investigations)

When time is critical and data collection and processing need to be expediting, the use of a one-pass AGC Survey can reduce the time and costs associated with performing dynamic AGC followed by cued DGM targets. USAE utilizes White River Technologies' One-Pass APEX system which fast-tracks the process, makes reacquisition of each anomaly unnecessary, and produces full AGC results with reduced time and effort.

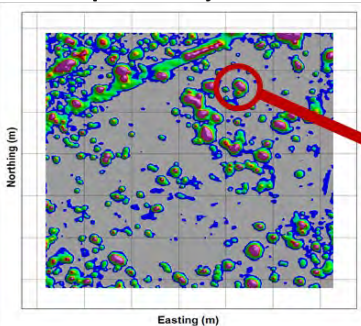
Step 1: AGC Dynamic Survey



Step 3: Target Classification



Step 2: Analyze Data



Step 4: Intrusive Investigation



USAE employs White River Technologies' DAGCAP accredited APEX One-Pass AGC sensor, Guam



Geonics EM61-MK2A deployed in stretcher mode during DGM survey, Tinian



USAE's custom designed EM61 towed array is customizable for 1 to 3 coil array.
Left – Two EM Coil configuration. Right – Three EM Coil configuration



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Underwater MEC Services

USA Environmental, Inc. (USAE) is a small business leader in locating, assessing, characterizing, and removing Munitions and Explosives of Concern (MEC) from underwater (UW) environments, which can be significantly more complex than addressing MEC on land. Similar to land-based munitions, clearing tidal and marine environments is important to public safety, environmental protection, and land use. USAE incorporates detailed planning when working in and around sensitive marine habitats and endangered species, oftentimes using remote methods to enhance their protection and the safety of personnel.

USAE's MEC divers are highly experienced at providing UW site investigation and remediation services. Mostly prior U.S. Navy EOD technicians, USAE's MEC divers are familiar with the techniques and safety protocols of locating, assessing, characterizing and removing tidal, beach and UW ordnance.

USAE explores world-wide trends in scientific and technological solutions to continually improve our value to our customers. We employ a wide array of tools such as autonomous UW vehicles, towed DGM and magnetometer arrays, navigation dive tablets, and Remotely Operated Vehicles (ROVs) with multibeam imaging sonar positioning, allowing for real-time observation and video documentation.



**USAE MEC diver Clears the site
with an UW detector**

Client Satisfaction

USAE has more than 16 years of experience performing UW MEC services at CONUS/OCONUS locations, including Hawaii, U.S. territories (Puerto Rico, Guam, and CNMI), completing more than 50 UW projects.

"Field effort is always ahead of schedule...underwater effort exceeded schedule by 300%...task order under budget overall". NAVFAC Atlantic comments, MEC Removal, Vieques Island, Puerto Rico.

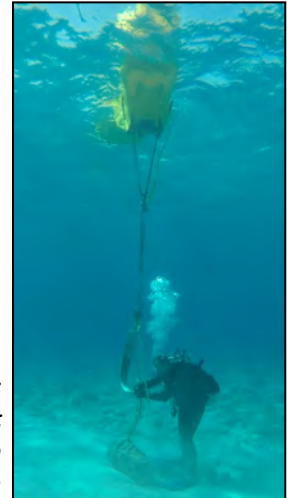
"USAE team overcame obstacles (many physical!) in executing the current fieldwork,...This follows the Remedial Investigation work where USAE's meticulous care during execution of all three phases of underwater fieldwork gained the Corps greater credibility with our regulatory and resource agency partners." USACE Jacksonville DERP-FUDS Program Manager comments on RI/FS work at Culebra, Puerto Rico.

Core Value: "Environmental Responsibility"

Dedicated to preserving a safe and healthy environment, USAE implements best practices to demonstrate our environmental stewardship.



Projectile in the UW Environment



**USAE MEC diver Deploys
a Remotely Operated Lift
Balloon System on MEC Item
as Part of a Removal Action**

Underwater MEC Services and Capabilities

- MEC detection, identification, and characterization.
- MEC clearance and removal actions.
- Explosive disposal/detonation w/ post-blast visual survey.
- Planning and protection for marine habitats/endangered species, including coral surveys and habitat assessments.
- Rapid response.
- Ability to safely operate in remote/higher risk locations.
- Towed camera; side scan sonar; magnetometers.
- Electromagnetic (EM) sensors; single/multi-beam bathymetry.

Shark Marine Technologies, Inc. Dive Tablets

- Uses GPS from the surface or *Doppler Navigation System (DNS)* for UW dead reckoning.
- *DiveLog* software provides a user-friendly way for a diver to navigate to and capture a location's associated data, as well as map UW features.
- Captures both still photos and videos.
- Rugged design and good down to 30 meters (100 feet).

Shark Marine Dive Tablets improves Location Accuracy in the Field





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Underwater Culvert/Structure Inspection

Using Inspection Class ROVs, USAE performs inspection of culverts, dams, and other UW structures.

USAE owns two VideoRay ROVs which allow real-time observation and video recording/documentation of UW environments.



USAE's Working/Inspection class ROVs

Enhance Safety and Reduce Costs of Underwater Field Operations

Field Tested

USAE routinely conducts ROV video inspections for the Southwest Florida Water Management District (SWFWMD) at various culverts and water control structures.

- Inspects 50-60 culverts per year; culvert lengths range from 50 ft. to 300 ft. in length.
- Salt and fresh water, tannic/low visibility, in blackout conditions.
- Effectively maneuver and complete visual inspections, with full coverage of culvert and seams between culvert segments.

Enhanced Safety

- ROV operates in high risk environments without exposure of operators/personnel/divers.
- Unlimited bottom time.

Capabilities

- Experienced operators effectively inspect culverts, dams, pilings, and other structures in low visibility UW environments.
- Highly mobile system; quick pre-deployment lead time and low cost.
- Real-time video documentation, with high resolution cameras to capture data for assessment and historical records.
- Ability to maneuver/conduct visual inspection at close proximity and can hold position within 4-6 inches.



ROV being sent to inspect the inside of a SWFWMD culvert

Core Value: "Proper Application of Technology"

Committed to exploring world-wide trends in scientific and technological solutions, USAE maintains a high level of skill and seeks to continually improve our value to our customers.

- Operates from shoreline, small boat, pier, land, etc.
- Small size allows operations in confined spaces.
- Compared to other inspection methods: cost effective, safer, faster, less complex.

Specifications

- Operational depth range: 1 to 1,000 ft.
- Uses 110V power source.
- Operates in currents of 2 to 3 knots.
- Sonar for navigation in low visibility water bodies with less than 1-ft. visibility.
- High Intensity lights for blackout conditions.

Data Viewing and Capture

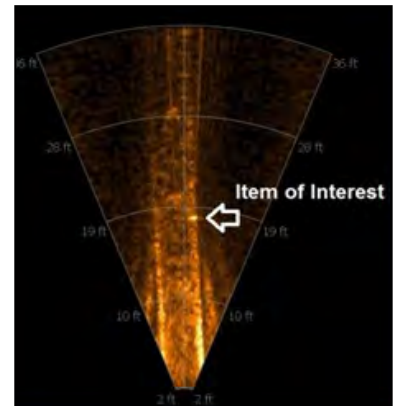
- Identification of obstacles and structural integrity with the ability to inspect at close proximity.
- Additional monitors for others to observe/verify inspection.
- Video/sonar data can be recorded, processed/edited, and provided via multiple delivery methods.

Optional Accessories

- Blueprint Oculus Sonar- dual frequency multibeam imaging sonar allows for navigation and detection of UW objects in low visibility UW environments.
- Blueprint SeaTrac Ultra-Short Baseline (USBL) positioning system- acoustic positioning system that allows for navigation and location of UW targets.



USAE's portable, highly mobile ROV system provides flexible, cost effective UW solutions



(above) Visual ROV inspection of sonar target; (below) calcified growth/shell on culvert wall





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UXO Construction Support / Anomaly Avoidance

Geotechnical investigations, environmental assessments, or construction activities can occur at sites potentially affected by previous military use. To ensure the safety of personnel on Architect, Engineering, or Construction projects where the environment may be contaminated with Unexploded Ordnance (UXO), USAE designs the best approach and provides DoD Explosives Safety Board (DDESB) Technical Paper (TP)-18 qualified and experienced UXO technicians available On-Call or On-Site to recognize and mitigate the risk to on-site workers.

USAE performs construction support / avoidance for:

- Geotechnical and geophysical investigations
- Horizontal construction, such as roads, pathways, fence installation
- Building foundations for vertical construction
- Biological, cultural and archaeological surveys
- Installation of underground utilities
- Underground environmental investigation activities
- All types of earth moving operations: vegetation clearance, site layout, trenches for utilities, practice ranges, etc.

Safety is our highest priority. Through USAE's training to on-site workers, or through daily safety briefings by USAE's UXO Safety Officers and Supervisors, USAE reminds field personnel to maintain UXO awareness, and to follow the 3Rs procedures: Recognize, Retreat, Report.

USAE has successfully performed hundreds of anomaly avoidance and/or construction support projects at locations throughout the United States, and at logistically challenging locales such as Alaska, Puerto Rico, Guam, Tinian, Hawaiian Islands, and Japan. We understand the importance of keeping to project schedules, and tailor our services specific to our customers' needs.

Anomaly Avoidance / Escort Activities

- Surface — UXO qualified individuals escort construction crews, surveyors, biologists, or other personnel to ensure they do not come in contact with any suspected munitions items while performing their specific non-intrusive activities.
- Subsurface — UXO qualified individuals check the subsurface with a geophysical instrument for potential metallic objects, and then directs all activity away from any anomalies.

Intrusive Activities

- In low probability areas, UXO support personnel are on hand to observe intrusive activities. If munitions are encountered, work stops until the munitions hazard is cleared.
- In medium-to-high probability areas, construction support is performed by clearing to appropriate depths prior to construction through the use of appropriately selected geophysical instruments.



***UXO Construction Support during soil operations
Camp Foster, Okinawa, Japan***



***UXO Technician lowering a Bore Hole Gradiometer
probe into a geotechnical bore hole, Waikoloa, HI***



***UXO Avoidance as Surveyors Plot Transects during
Range Construction, Okinawa, Japan***



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Innovative Technologies (Robotics)

USAE uses robotics to support field operations that may include hazardous or dangerous conditions, greatly reducing the risk to human health and safety.

Portable Robotic Crawler System

To safely inspect discharge pipes for MEC explosives contamination, USAE's robotic camera system visually inspects pipelines that may be potentially contaminated with explosives material which may result in removal and subsequent thermal treatment. This system, specially designed for pipes and confined spaces, is cost effective and easily transportable. Used extensively during our MEC Remedial Action project at former Sunflower Army Ammunition Plant, KS project, we robotically inspected >9,100 linear feet of pipeline. This capability increased pipe removal production by reducing the need for UXO technicians to manually inspect shorter runs of pipe, and enhances site safety by reducing entry into confined spaces. As a result, the project realized a cost saving of approximately \$300,000.

Unmanned Aerial Vehicles (UAVs)

UAVs have numerous applications to increase safety and efficiency on MEC project sites. USAE utilize Federal Aviation Administration certified pilots to operate UAVs in support of pre-proposal site visits and ongoing projects. The aerial images and videography capability enhances wide area assessment data collection and provides a third dimension in risk analysis. To date, USAE has utilized several various-sized UAVs in site surveillance, for observation of explosives disposal tasks, and during pre-construction efforts, at numerous locations across the United States. The aerial observation capability also provides excellent site security monitoring during explosives disposal operations, as well as unobstructed views of large acreage remediation sites, or those difficult to access, such as cliffs, crevices, and steep slopes.

Additional Innovative Technologies

- **Ruggedized tablets:** USAE employs *Samsung SM-T380 Tablets* in conjunction with the *Trimble DA2 GPS Receiver* providing sub-meter accuracy during data collection in the field.
- **Seismographic instrumentation:** Used during demolition activities, USAE's *Instatel Blastmate III* monitors blast induced ground vibration and air over-pressure.



- **Armored, robotic heavy equipment —** USAE manages large-scale robotically controlled sifting, vegetation removal, and clearance activities performed by Northwest Demolition & Dismantling (NWDD) and other teaming partners.

NWDD's Robotic Sifter with Trommel Bucket, Puerto Rico



USAE's Pearpoint flexitrax 350 robot being prepared to visually inspect a section of 36" diameter pipe



Unmanned Aerial Vehicle (UAV) and Controller



UXO Field Personnel entering data on a ruggedized tablet



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Innovative Technologies

USAE employs state-of-the-art technologies and approaches at all of our project sites. We use a formal and proven review process that identifies, analyzes, and tests proposed innovative solutions for safety, field-worthiness, and effectiveness. The following paragraphs highlight some of these innovative technologies.

Digital and Film X-Ray

USAE uses portable x-ray technology (digital and film) in-the-field to provide an additional layer of safety for site personnel. This technology allows qualified and x-ray trained UXO personnel to determine specific munitions as live, practice, or empty. This determination reduces the number of individual or consolidated MEC disposal events, thereby increasing safety, reducing hazards, time, cost, and environmental impact. Overall, the use of the x-ray can result in a safer, more efficient, and cost effective project.

The X-ray contains no active radioactive material. It produces radiation only when pulsing.

Field Portable X-Ray Technology has been successfully used by USAE for more than 18 years, to differentiate between live, practice, and expended munitions in the field. USAE owns several x-ray machines and their associated digital and film-based receiver units. In addition to the significant safety impact of eliminating the need for disposal operations, the use of this technology has resulted in substantial time and cost savings to our customers. USAE has used this technology on more than 45 projects.

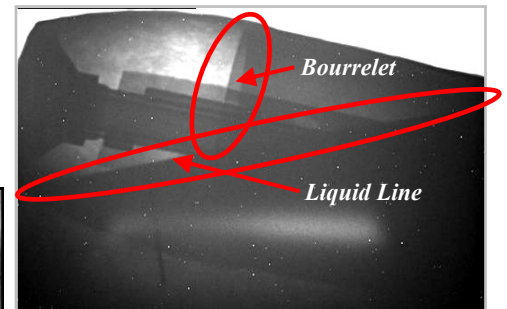
Identifying Munitions Using X-Ray in the Field

2.36" HE Anti-Tank Rocket M6

- Cone shape indicates anti-tank rocket
- Cone with inert filler/no detonator indicates a practice round
- X-ray identification of the live booster for a 2.36" rocket (shown to the right).



4.2" Mortar depicting Burster Tube, the Bourrelet, Baffles, and Liquid Line, indicating a possible chemical-filled munition



Use of a Digital Receiver to View a 4.2" Mortar

X-Ray Features and Benefits

- Menu-based software
- Simple variable pulse setting
- Highly portable



- Flexibility to develop complete radiographic system that can be used with:
 - ♦ Conventional radiographic film
 - ♦ Instant radiographic film within 2 minutes
 - ♦ Digital inspection systems immediately

