

US EPA ARCHIVE DOCUMENT

**RCRA Showcase Pilot  
Region I**

**Sporting Goods Properties, Inc.  
Bridgeport, CT**

Sporting Goods Properties, Inc., is conducting an investigation for large caliber unexploded ordnance (UXO) on their 422-acre Lake Success Business Park (LSBP) property in Bridgeport, CT, as part of their efforts to achieve Resource Conservation and Recovery Act (RCRA) Corrective Action goals on the property. The investigation and removal of any UXO identified will benefit the environment by allowing further site investigation and remediation to proceed without risk of encountering live ordnance. The UXO investigation will also benefit the community and economy by allowing the property to be remediated and redeveloped and by allowing a portion of the property to be donated to the town of Stratford, CT, for a road project.

**Site Background**

LSBP was owned and operated by the Remington Arms Company and used, from the late 1800s until 1989, for production, testing, storage, and disposal of small and large caliber ammunition and powders. In 1990, the Environmental Protection Agency (EPA) and Remington Arms entered a RCRA §3008(h) Administrative Consent Order requiring Remington Arms to investigate areas where discharges of hazardous waste or hazardous constituents may have occurred and to propose strategies for remediating areas where contamination presents an unacceptable risk to human health and the environment. In 1993, the name of the Remington Arms Company was changed to Sporting Goods Properties, Inc (SGP). SGP has been investigating and remediating the property, which it plans to redevelop as a business park.

State and local governments, community groups, and individual concerned citizens have been involved in planning investigation and remediation. As the property is located in a dense residential/commercial area, close coordination with neighboring residents and businesses is required. A range of public involvement approaches are used by both EPA and SGP, including regular community advisory panel meetings and newsletters, as well as public meetings, meetings with community groups, site tours, and neighborhood canvassing as necessary.

In September 1999, two live artillery rounds (37 and 66 mm) were discovered in excavated contaminated soil that was undergoing on-site treatment by soil stabilization. Prior to this discovery, historical information had suggested that all munitions disposed at the site had been placed in the on-site lake, Lake Success (where small and large caliber rounds up to 75 mm have been identified). However, discovery of the munitions in soil raised the concern that ordnance disposal had occurred in other areas of the property.

**UXO Investigation Methodology**

To prevent accidental contact with disposed UXO, Sporting Goods Properties (SGP), owner of LSBP, halted soil excavation and treatment. Next SGP began to search the property for any other UXO disposed outside of the lake. The methodology SGP is using to search the property for UXO involves two main steps:

1) **UXO scan:** An EM-61 dual antenna magnetometer is used to locate metal objects buried in the soil, with the objective of identifying metal objects the size of a 37 mm round or larger within a depth of 2 feet. A person wears this metal detector and walks back and forth in a zig-zag pattern to ensure that every inch of the area is scanned. The location of any metal objects detected is identified, using Global Positioning Systems (GPS) and recorded (Figure 1). This is standard UXO scanning technology employed by Explosive Ordnance Disposal (EOD) specialists nationwide.

2) **UXO verification:** Each metal contact, identified through the UXO scanning step, must be investigated to determine whether it is UXO. SGP has worked with experts from Tyndall Air Force Base in Florida and from companies that specialize in handling UXO to develop a plan for investigating these metal contacts safely. The plan involves using remote control equipment with specialized attachments, including an electromagnet, a grapple, a rake, and a backhoe, to pull each object out of the soil (Figure 2). This equipment will allow workers to control and observe the process from a safe distance. A steel blast shield, that is enclosed on three sides with a roof, will be positioned over each metal contact as it is investigated. This blast shield is designed to contain and direct any blast effects away from the property boundary in the unlikely event of a detonation of an uncovered UXO (Figure 3). This will protect workers as well as people located off-site near the property. Multiple powerful cameras focused on each object as it is uncovered will allow workers to determine if the object is ordnance. If it is not possible to make a determination based on camera views, an EOD specialist dressed in a protective suit will investigate the object.

#### **Management of Any UXO Discovered**

Any UXO discovered during this investigation will be transferred to a steel box designed to contain a detonation. This box will be transported to an on-site underground bunker for temporary storage. All other scrap metal that is uncovered will be collected for recycling. Alternatives for disposal of any UXO will be evaluated based on what is found. For example, if several UXO are found, a blast chamber may be brought on-site for detonating the UXO



**Figure 1**  
UXO Scanning Equipment



**Figure 2**  
Remote Control Equipment

collectively. If only a few are found, EOD specialists may detonate them individually on-site.

### **Pilot Project Schedule and Evaluation**

A UXO scan completed in autumn 2000 on a 70-acre parcel of the property identified 2,420 metal contacts. In April 2001, SGP began a UXO verification pilot project on the 294 metal contacts identified in a 4-acre section of this 70-acre parcel. This 4-acre section is slated for donation to the town of Stratford for a road project. The UXO verification pilot, completed on July 21, 2001, discovered no ordnance. SGP intends to evaluate the cost and effectiveness of the pilot and to plan how the remainder of the property will be investigated for UXO.

In evaluating the pilot and planning future work, SGP is considering ways to make the project more efficient. For example, efforts will be made to narrow down the number of metal contacts which require verification. However, work to date has shown that the success of these efforts varies from location to location, based on presence of magnetic rocks and overhead power lines. In addition, a risk assessment may be performed to identify areas in where there is a higher probability of finding UXO and to focus the UXO investigation on these areas.

### **How is this Project Innovative?**

This project illustrates tremendous up-front effort and expense on the part of SGP to increase the margin of safety, for workers and the public, by using remote control equipment (Figure 2) to search for UXO. Though this remote control equipment has been used once previously to investigate a bomb field, this project represents the first time ever that it has been used for ordnance investigation.

### **Transferability of the Project**

The use of remote control equipment to search for ordnance is extremely time-consuming and expensive. A substantial initial investment is required in equipment, testing, and training. However, this approach greatly minimizes the risk to workers and other nearby receptors. If it is possible to minimize the time and cost involved by narrowing down the contacts requiring investigation, for example, this technology could be useful at other sites where UXO may have been disposed.

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**Figure 3**  
Portable Blast Shield