



## ODNR Delaware Firing Range

**CLIENT:**  
ODNR/GC

**ROLE:**  
Subcontractor/  
Self-Performing

**PROJECT NUMBER:**  
10-19-0040

**Contract Amount:**  
\$1,250,000.00

**DATE COMPLETED:**  
March 2020

### PROJECT HIGHLIGHTS:

- *Screened and remediation 14,000CY of lead Impacted Soil*
- *Treated and discharged lead Impacted water from pond, stabilized sediment*
- *Installed new berms using GPS guided equipment*
- *Produced "ballistic sand" and placed on new berms to reduce future liability/costs.*
- *Stabilized waste soils for non-hazardous disposal using specialty leachate reducing product.*
- *Conducted all work In a floodplain and successfully managed E&SC controls.*

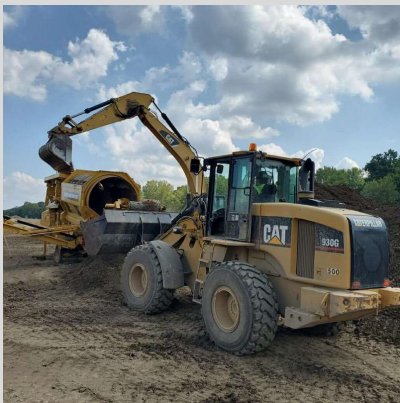


Buckeye Elm was contracted to perform the environmental remediation portion of the Delaware firing range project. The project consisted of remediating the existing range and building a new, state of the art range on the same property. The project consisted of the following tasks

### Existing Range and soil screening

Buckeye Elm screened over 14,000CY of soil containing lead bullets from the existing range and surrounding area. The screener removed bulk lead bullets, allowing the screened soil to be placed into new berms for the new shooting range. Soils were also adjusted for pH using lime to help reduce the leachable lead remaining in the screened soils.





### **POND REMEDIATION**

An on-site pond containing lead impacted water was remediated using specialty filtration equipment. Upon treating and discharging the water, the sediment was removed, stabilized with lime, and placed on the backside of the new berms.



### **NEW RANGE CONSTRUCTION**

After screening, the soil was placed in new berms using GPS guided equipment. Compaction was performed and proper grades were met to ensure the berms were built as designed. After building the new berms, “ballistic sand” was made consisting of structural sand and a specialty product meant to reduce lead leachability. The sand was placed on the face of the new berms. The ballistic sand will reduce contamination and future cleanup/maintenance costs because of its ability to reduce lead leachability.



### **TRANSPORTATION AND DISPOSAL**

After characterization of the waste soils, samples were collected to determine the leachability of the lead. Based on this characterization, soils were sent off-site for stabilization and ultimately disposal as non-hazardous waste. Stabilization uses specialty products to reduce the leachability of lead in soils to non-hazardous levels, providing significant savings compared to hazardous waste disposal.

### **TEAM PARTNERS**

Buckeye Elm successfully completed this project while working as part of a team with ODNR, the Engineer, the General Contractor, and the Site Civil contractor.

*Proper scheduling and coordination with the field personnel allowed completion of the project within budget and ahead of time.*



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