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CASE STUDY / **LOVELAND PRODUCTS ADAPTIVE SITE MANAGEMENT**

INTEGRATING RCRA CORRECTIVE ACTION WITH FERTILIZER PLANT DEMOLITION

A dry fertilizer facility had been under regulatory oversight since the 1980s because of soil contamination. Using an innovative approach, the new owner demolished old structures, cleaned up remaining contamination and prepared the property for redevelopment in just nine months — a fraction of the typical time frame.

ADAPTIVE SITE MANAGEMENT APPROACH ACCELERATES REMEDIATION EFFORT

Combining and coordinating innovative remediation and demolition processes produced a dramatic schedule reduction, facilitating eventual redevelopment efforts.

PROJECT STATS

CLIENT
Loveland Products Inc.

LOCATION
Fairbury, Nebraska

TOTAL PROJECT COST
$5.6 million

COMPLETION DATE
December 2016

$200K
BUDGET SAVINGS

8,961
TONS OF CONTAMINATED SOIL

100
TONS OF FERTILIZER SOLIDS

9
MONTH SCHEDULE

CHALLENGE

After acquiring a former micronutrient dry fertilizer facility in Nebraska, Loveland Products Inc., a division of Nutrien Ag Solutions, decided in 2016 to prepare the site for redevelopment. Due to metal contamination in the soil, the site had been under U.S. Environmental Protection Agency (EPA) and state regulatory oversight since the 1980s, with Resource Conservation Recovery Act (RCRA) Corrective Action (RCA) ongoing since 1998. While remediation had been completed in areas outside the facility, inside progress had stalled. Loveland Products wanted to take a more progressive approach and complete the work by year's end.

RCRA requires facilities that treat, store or dispose of hazardous wastes to investigate and clean up any releases into the soil, water and air. The RCA cleanup process was originally designed to be flexible, driven by site-specific conditions. However, in reality the entire process takes, on average, 16 years to complete.

Condensing the process to just nine months at this dry fertilizer plant presented complex challenges. In addition to finding a fast way to excavate, treat and dispose of nearly 9,000 tons of contaminated soil, this project would require planning and implementing the simultaneous decommissioning and demolition of multiple buildings at the site without compromising the continued operation of an adjacent facility. To address these challenges, Loveland Products selected our team as engineer-procure-construct (EPC) contractor for the demolition, remediation and restoration project.

The job required conceptualizing a rapid remediation approach within the framework of the RCA process. Once a Soil Treatment Work Plan was developed and approved by regulators, we faced the additional challenges associated with de-energizing and demolishing buildings and structures at the site, and removing and disposing of hazardous waste and stabilized soil, as well as demolition debris, building contents and concrete foundations, before restoring the site for redevelopment.

SOLUTION

The $5.8 million project called for our team to develop an adaptive site management approach to integrate soil remediation under the RCA process with demolition of the facility.

Our team prepared and submitted a Pre-Demolition Characterization Work Plan to the EPA and Nebraska Department of Environmental Quality (NDEQ) to obtain the data needed to refine schedule and budget criteria. By collecting soil samples from beneath the buildings, we determined the presence and extent of the contamination. We used these findings to estimate the amount of soil to be removed and determine appropriate disposal methods.

Using the data collected during the Pre-Demolition Characterization activities, our team developed a Soil Treatment Work Plan proposing treatment on-site during excavation activities.

The integrated team met with regulatory agencies to conceptualize a rapid remediation method that complied with the RCA framework. Working together, we received approval to implement an on-site treatment method that involved mixing the metals-contaminated soil with Portland cement. Soil treatment bench tests were performed to confirm the feasibility of stabilizing metals in the soil to below toxicity characteristic leaching procedure (TCLP) regulatory levels. This method stabilized soil at the site rapidly and allowed us to dispose of soils as nonhazardous waste.

Ongoing meetings and frequent communication with regulators prior to and during the preparation of the work plans resulted in regulatory approval within six weeks. Implementation began immediately thereafter.

By the time the project was complete, our team had excavated, treated and disposed of 8,961 tons of stabilized soil, along with removing and disposing of 100 tons of fertilizer solids as hazardous waste, 375 tons of demolition debris and 94 loads of concrete. When restoring the site for redevelopment, we rubblized 7,160 tons of concrete slabs and foundations for reuse as backfill for soil excavation.

Overall success was based in the EPC project delivery method, which assigned us overall project management and budget and schedule control, from concept and design to procurement and construction. This approach made it possible to conduct environmental investigations during the demolition process and to integrate demolition and remediation decision-making. Agile work plans allowed decisions to be made in the field in real time, providing flexibility to accommodate time and budget constraints.

RESULTS

The remediation, decommissioning and demolition of the dry fertilizer plant was completed in under nine months at a total cost of less than $5.6 million, saving $200,000 from the original budget. The streamlined decision-making process allowed the team to complete the building demolition and soil remediation simultaneously, which saved time and money. Both were completed by the end of 2016.

The project fulfilled all of Loveland Products' stated objectives. The site was restored and available for redevelopment in the specified time frame. The proactive approach also reduced the expense, long-term liability and risks associated with ongoing remedial activities. The adjacent facility remained in full operation throughout the nine-month process. The work itself was also completed safely. In total, more than 7,000 man-hours were completed at the site with no recordable injuries or illnesses.

The project also demonstrated how a strong, transparent working relationship with regulatory agencies can result in innovative solutions and faster regulatory approvals. By drawing on decades of experience and creative thinking, the team developed a remediation solution that dramatically reduced remediation time and costs while working within the RCA framework.

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