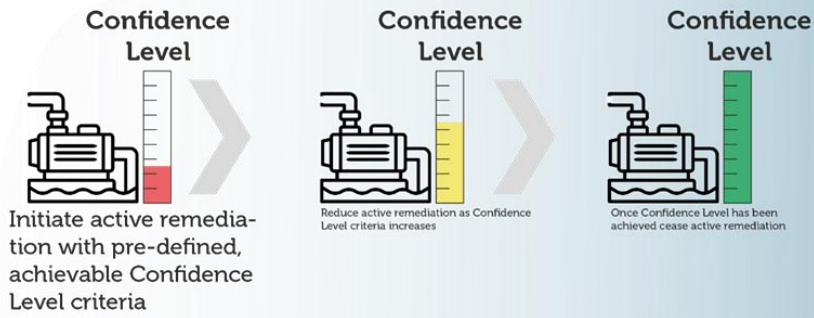


Aberdeen Pesticide Dumps Site Case Study



**IMPLEMENTATION
SIMPLICITY**



SIMPLICITY

The Aberdeen Pesticides Dumps Site (APDS) is located in Aberdeen, North Carolina and encompasses approximately 10 square miles spread over several non-contiguous areas. The site supported pesticide formulation activity from the 1930's until 1987. The non-contiguous areas were historically used for disposal of pesticide-related waste.

NewFields provided strategic planning, design, and implementation for soil and groundwater remediation, and provided cost tracking, analysis and forecasting for the \$35 million APDS project.

The soil remedy was excavation and the successful on-site thermal treatment of approximately 124,000 tons of soil and the disposal of approximately 4,000 tons of soil/debris at a Subtitle C landfill. Several scope and cost control initiatives were identified at the outset and continued throughout the project to reduce the soil remediation cost, such as sharing the thermal treatment unit with adjacent sites also performing remediation so as to leverage the construction cost.

Another significant cost-reducing measure for the soils excavation consisted of obtaining Agency approval for the use of compositing for excavation confirmatory sampling and domain averaging for validation of achieving performance standards for soils. This significantly controlled excavation expansion by limiting the impacts of anomalous measurements.

Most significant was the elimination of a pump and treat system (P&T) and its replacement with Monitored Natural Attenuation. Two 500 gpm P&T systems were identified in the 1993 Record of Decision (ROD). NewFields established a 10-year plan to progressively inform, engage and educate the EPA that the P&T was not necessary to protect human health and the environment, and policy goals were better served with more passive systems. The alternatives did include finite localized source reduction with a pilot of hydrogen release materials, but the primary control is phytoremediation and phytostabilization.

The 1993 ROD was changed in 2003 when EPA issued an Amendment which modified the remedy to include phytoremediation, monitored natural attenuation of contaminated groundwater, and limited institutional controls. Figure 7 provides the result of the strategic planning. A comprehensive plan was developed in 1994 to reduce the ROD implementation cost through Remedial Action from \$77 million to less than \$30. The remedial action was completed in 2002 for \$32 million, saving the PRPs approximately \$50 million and reducing long term O&M by 95%.

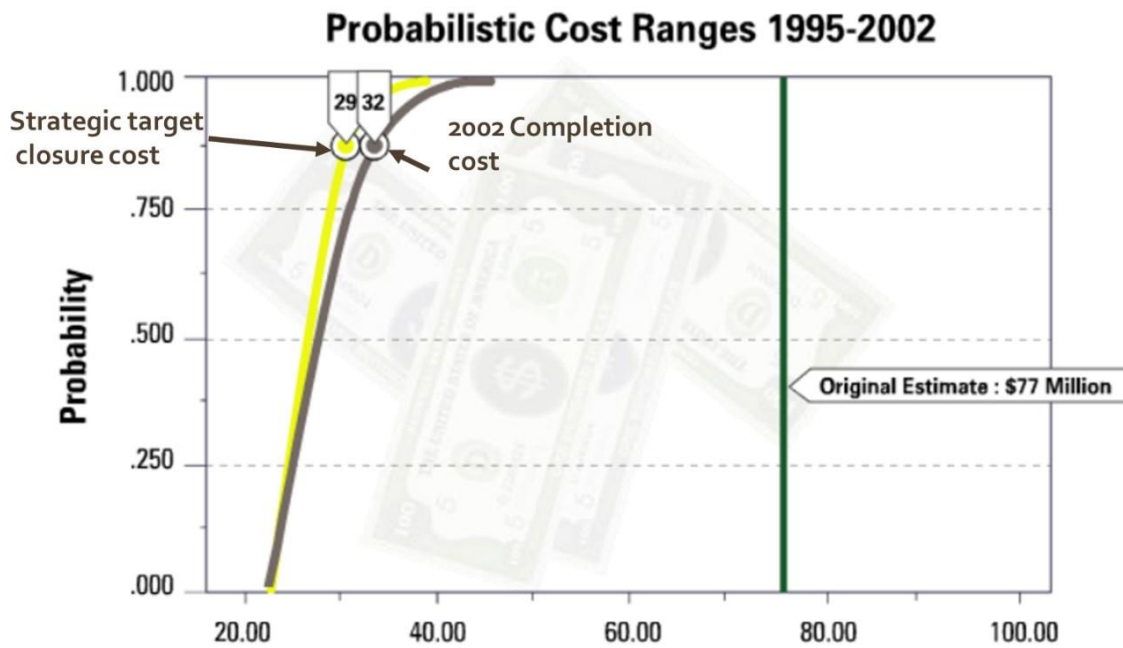


Figure 7 - Total Project Cost Reductions through Remedial Action for APDS Soils/GW Remediation

The above was achieved with the systematic approach described in this document. This project provides an empirical example of the impact of applying the approach to deemphasize mass removal, hydraulic control, and default Agency Requirements.

The APDS site was in close proximity to two other Superfund sites (the Geigy and Route 211 Superfund sites) and both have the same contaminants, same geology, and within the same aquifer. Figure 8 presents the locations of the sites.

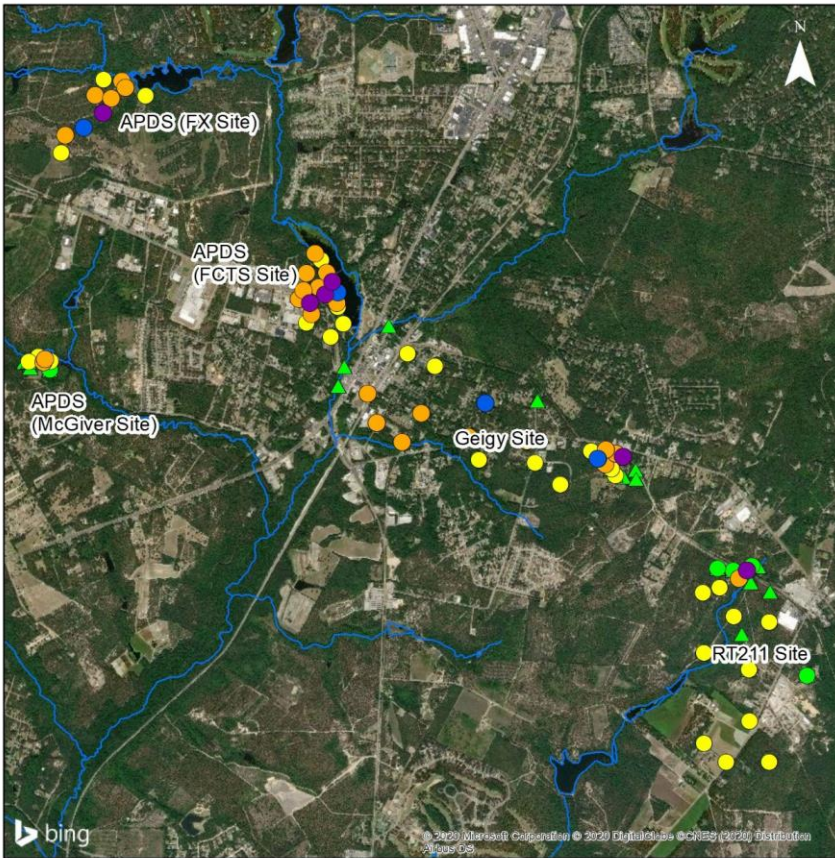
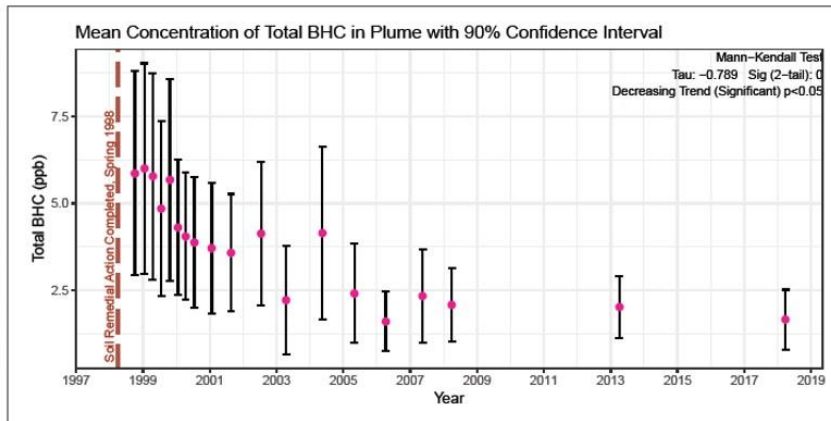
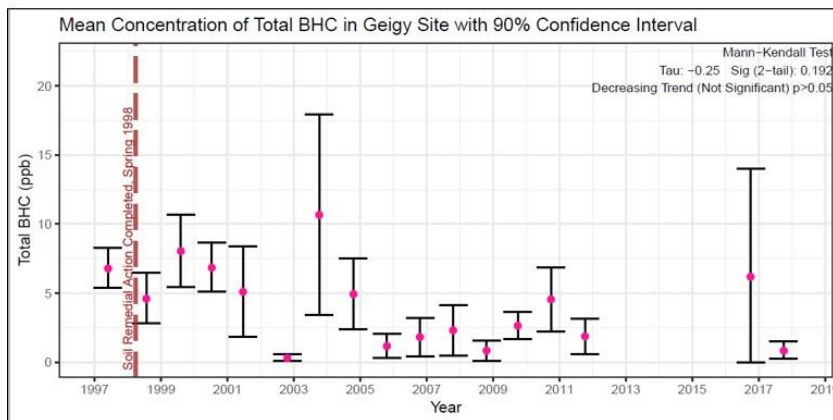


Figure 8 Location of APDS Sites, Geigy, and RT211 Sites

Comparing these sites provides a side-by-side case study of the outcome of different remediation management approaches. The Geigy and Route 211 sites had the same ROD language requiring pump and treat. These sites implemented the pump and treat systems and are still running after 25 years. Figure 9 shows the trends at the Geigy site compared to the Aberdeen site. The trends are no different (or potentially less variable and more stable at Aberdeen) despite many millions in additional cost, millions of gallons of groundwater extraction and treatment, and all of the related transaction costs of running an active remedy system at the adjacent Geigy site.



Aberdeen Superfund Site
Monitored Natural Attenuation and
Phytoremediation



Geigy Superfund Site
Pump and Treat

Figure 9 - Comparison of Geigy and APDS Sites

In late December 2019, the APDS PRPs received approval from EPA and NCDEQ for an updated Performance Standard Verification Plan (PSVP) for the Aberdeen Site (Figure 10). This updated PSVP focuses groundwater monitoring on the BHC isomers on a 5 year sampling interval. It eliminates surface water and sediment monitoring and eliminates metals, VOCs, SVOCs, and most pesticides in groundwater monitoring. Approximately 50 monitoring wells were closed. This accomplishment with EPA and NCDEQ puts the Aberdeen site in a low-cost position for the long-term, with a low risk for contingency. The only costs are phytoremediation maintenance and once every 5 years groundwater sampling.

APDS is a prime example of a Superfund site effectively closed without meeting the Agency requirements. The success is directly tied to the technical team collecting the supporting necessary data and communicating and staying on message for passive management and developing a trust with the Agency.