United States Environmental Protection Agency

GREEN REMEDIATION

Highlights in EPA Region 4

Sanford Gasification Plant Green Remediation Benefits: Greenhouse Gas Emission Reductions, Waste Reduction and Recycling, and Local Economic Impacts

EPA, contractors and private parties partnered to implement greener best management practices (BMPs) that reduced the environmental carbon foot print resulting from cleanup activities at the Sanford Gasification Plant Superfund site in Sanford, Florida. Specific impacts from these greener BMPs include:

- Avoided 13,700 tons of CO_2 emissions by using granulated blast furnace slag in lieu of cement as part of the contaminated soil stabilization formula.
- Avoided 177 tons of CO_2 emissions by using biodiesel.
- Recycled 3.7 million gallons of water.
- Over 5,000 cubic yards of trees and stumps chipped and sent to local landscaping companies for use as mulch, resulting in 800 tons of recycled material avoided being shipped to landfills.
- Over 1,600 cubic yards of on-site clean soils tested and approved for on-site use.
- Shortened length of cleanup activities by approximately one year.
- $8 million in local economic impacts resulting from use of local contractors, vendors and supplies.

SITE BACKGROUND: The Sanford Gasification Plant (SGP) site is located in a residential/commercial area of Sanford, Florida, approximately 25 miles northeast of Orlando. Historically, the SGP site was a Manufactured Gasification Plant that operated from the 1880s to approximately 1951. Water gas and carbureted water gas were manufactured at the SGP by carbonization or destructive distillation of bituminous coal and coke. At the end of the manufacturing process, gas holder tanks, frequently used to store waste tars and condensates, frequently leaked resulting in contamination.

CONTAMINATION AND REMEDIAL ACTIONS: Since the early 1990s, several potentially responsible parties (PRPs), referred to as the Sanford PRP Group, have undertaken actions relating to environmental concerns at the site. EPA and the Florida Department of Environmental Protection also conducted site-related environmental investigations to determine potential impacts to soil, ground water, surface water and sediments from operations of the former gasification plant. The Sanford PRP Group initiated cleanup activities under EPA oversight in December 2009 to address contaminated subsurface soils and creek sediments. The project included stabilization of more than 142,000 cubic yards of soil as well as the diversion and restoration of more than 2,300 feet of creek bed. To date, this is the largest completed environmental on-site stabilization project in the United States. Contaminated ground water will be addressed through monitored natural attenuation. The site is not listed on the National Priorities List (NPL), but is considered to be an NPL-caliber site and is being addressed through the Superfund Alternative Approach.

A photo from the Sanford Museum shows the gasification plant in the early 1900s.

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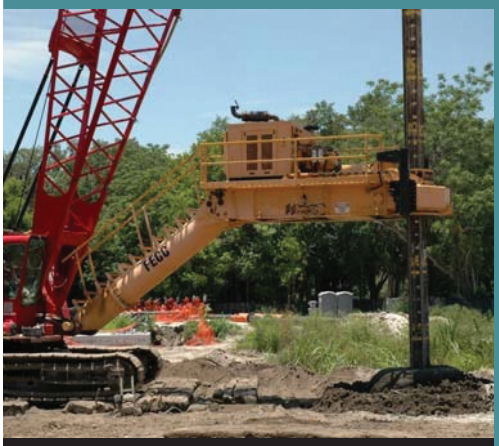

Soil stabilization activities at Sanford Gasification Plant site.

Solar-powered backup power sources were used for the perimeter air monitoring system.

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APPLYING GREENER BMPS:

The Sanford PRP Group in collaboration with EPA, Natural Resource Technology, Inc. (remedial oversight contractor), and WRScompass (remedial construction contractor), voluntarily adopted and implemented greener BMPs that reduced the environmental carbon foot print resulting from cleanup activities in addition to other benefits.

Minimizing Total Energy Use and Maximizing Use of Renewable Energy

The primary way the Sanford remedial team minimized total energy use was by using granulated blast furnace slag instead of cement as part of the contaminated soil stabilization formula; this resulted in 13,700 tons of avoided CO_2 emissions. The Sanford remedial team also used a gravity drain system along the creek instead of relying on large diesel pumps to divert over 500 linear feet of stream during remediation of contaminated sediments. In addition, the team used solar-powered backups for the perimeter air monitoring system.

Minimizing Air Pollutants and GHG Emissions and Maximizing Use of Machinery Equipped with Advanced Emission Controls

Actions taken to reduce impacts to air quality and greenhouse gas emissions, in addition to those discussed above, included: use of B20 (a biodiesel/petroleum diesel blend) and ultra-low sulfur diesel; use of more fuel efficient tier-2 and tier-3 equipment; use of anti-idling for heavy equipment; and use of biodegradable foam suppressants to reduce air pollutants.

Minimizing Water Use and Impacts to Water Resources

The Sanford remedial team sought to reduce water use where possible, including collecting and reusing site water. In total, 3.7 million gallons of water were recycled.

Beneficial Reuse of Materials/Reduction of Materials and Waste Reduction

Actions taken related to the beneficial reuse of materials/waste reduction efforts included: use of recycled concrete for creek bed material to limit erosion (i.e., riprap); chipping and mulching of approximately 5,000 cubic yards of trees and stumps removed for heavy equipment operation subsequently sent to local landscaping companies; reuse of on-site soils determined to be clean for on-site use; and concrete recycling.

Use of Local Labor and Supplies

The Sanford remedial team used local labor, vendors and supplies where possible. Both the remedial engineer and remedial contractor hired local personnel to fill various positions needed in areas of technical, administrative, skilled labor and general labor positions. Approximately 75 percent of the purchases were made from local vendors, resulting in approximately $8 million in local economic impacts. In addition, the city performed on-site recycling where appropriate.

LESSONS:

This project demonstrates that through team work, coordination, and careful consideration to the environmental impacts resulting from all aspects of cleanup, opportunities for significant environmental improvements can be identified and implemented, even for large-scale remedial projects. In addition, it demonstrates that PRPs are willing to adopt greener BMPs because they are not only good for the environment, but in most instances they result in time and cost savings.

About the Calculations

Calculations of environmental and economic impacts as well as cost savings were prepared by WRScompass. CO_2 emission reductions are based on U.S. Energy Information Administration emission factors.

EPA

www.epa.gov/superfund/greenremediation