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Reuse and the Benefit to Community

A Beneficial Effects Economic Case Study for the Martin-Marietta, Sodyeco, Inc. Superfund Site

Introduction

Starting in 1936, several owners manufactured dyes and specialty chemical products at the area now known as the Martin-Marietta, Sodyeco, Inc. Superfund site in Charlotte, North Carolina. Disposal of wastes in landfills and pits led to soil and groundwater contamination with volatile organic compounds.

Cooperation among the U.S. Environmental Protection Agency (EPA), the North Carolina Department of Environment and Natural Resources (NCDENR), the developer, the site's owner, and state and community partners has led to the successful cleanup and reuse of the property. Today, the Martin-Marietta, Sodyeco, Inc. site is home to ReVenture Park, a busy industrial park focused on energy efficiency, renewable energy and environmental technology.

Superfund site restoration and reuse can revitalize local economies with jobs, new businesses, tax revenues and local spending. Cleanup may also take place while active land uses remain on site. This case study explores the cleanup and reuse of the Martin-Marietta, Sodyeco, Inc. site, illustrating the beneficial effects of Superfund redevelopment.

Beneficial Effects

Site businesses employ about 30 people, providing estimated annual employment income of over $2.2 million and generating more than $3.3 million in annual sales revenue during 2017.

The site property is currently valued at over $4.5 million and generates about $50,000 in annual property tax revenues.

A 185-acre conservation area enhances the site's natural resources. Projects include wildlife habitat, stream restoration, and a connector trail system.

There is a fully vegetated pollinator garden on the site.

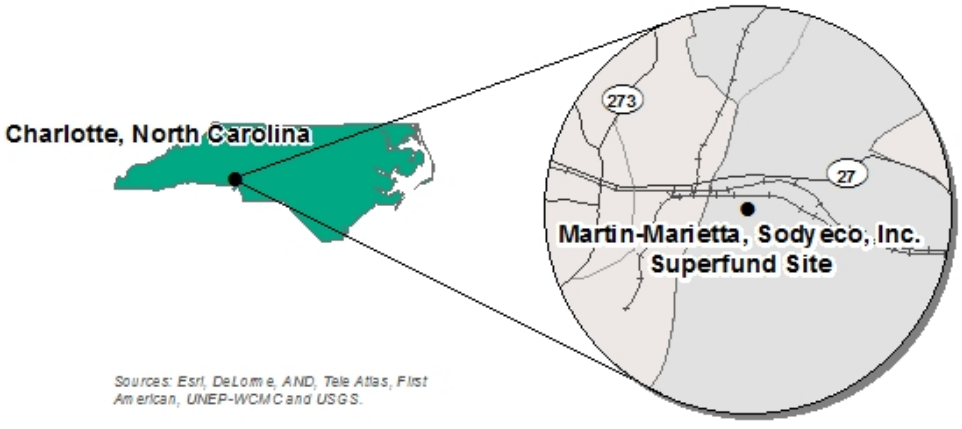

Figure 1. Location of the Martin-Marietta, Sodyeco, Inc. Superfund site in Charlotte, North Carolina.

Site History

The site is located on Highway 27, about 10 miles west of Charlotte in Mecklenburg County, North Carolina. The site property is bounded by the Catawba River on the west and Long Creek to the east. The Catawba River is used for recreational purposes. The areas surrounding the Site are primarily undeveloped woodland, sparse residential and light industrial areas. According to the U.S. Census, about 860,000 people lived in Charlotte in 2017.

The Site is within an inactive portion of an active manufacturing facility regulated under EPA's Resource Conservation and Recovery Act program. Most of the site property is covered by woodlands and grassed areas. Manufacturing, administrative and storage facilities cover about 150 acres of the approximately 1,500-acre site property. The site property is fenced and has a staffed entrance gate.

Figure 2. Aerial view of the site circa 1972. The area is located along the banks of the Catawba River.

Starting in 1936, various site owners manufactured dyes and specialty chemical products at the site property. Operators disposed of wastes in several landfill areas, covered pits and wastewater settling ponds. In 1982, EPA found contaminants in surface water and groundwater on site. EPA placed the site on the National Priorities List in 1983.

Site Cleanup and Transformation

EPA and its partners developed a comprehensive remedy that included capping some site contamination in place, disposing of waste materials and contaminated soil off site, and pumping and treating site groundwater. EPA worked closely with the site owner and its state and local partners to select a remedy, clean up the site, and support its return to productive use as the region's first Eco-Industrial Energy Park. Following the site's cleanup, EPA deleted the site from the National Priorities List in February 2012, clearing the way for the transformation of a 667-acre area along the Catawba River into ReVenture Park. The property's delisting qualified it for state and federal brownfield grants and incentives.

Figure 3. The 2014 Excellence in Site Reuse Award Ceremony.

To make the site's reuse possible, EPA's Superfund and Resource Conservation and Recovery Act programs worked closely with the site's owner, Clariant Corporation (Clariant), and the community to make sure site reuse plans were compatible with the Superfund site's cleanup. In August 2011, Clariant put land use controls in place permitting only commercial and industrial land uses across cleaned-up areas of the site and ensuring land uses are compatible with the site remedy. Clariant will also

Figure 4. Former EPA Region 4 Superfund Division Director Franklin E. Hill speaking at the award ceremony.

continue to maintain the site's remedy. In 2014, EPA Region 4 awarded the ReVenture Park developer, Forsite Development, with the "Excellence in Site Reuse" Award.

"The successful reuse of the Martin-Marietta/Sodyeco site is an example of EPA's commitment to support beneficial reuse of sites, using cleanup programs to ensure protection of future users. The partnership between government and the private sector, and a vision to bring about positive change for the community has resulted in the accomplishment of a great milestone for the site. The path to redevelopment has been established and it will lead to a productive community asset. EPA will continue to work with enterprising individuals and organizations to bring new opportunities to communities impacted by contaminated sites."

- **Franklin E. Hill, Former EPA Region 4 Superfund Division Director**

Beneficial Effects

Today, the Martin-Marietta, Sodyeco, Inc. site supports a busy industrial park focused on energy efficiency, renewable energy and environmental technology. Businesses that operate on site bolster the local economy and help generate local and state tax revenues. Environmental stewardship is also an integral part of the site's redevelopment plans. This section describes the beneficial effects of reuse at the site.

The site's redevelopment has breathed new life into the site by reusing the site's extensive existing infrastructure – rail and interstate access, a wastewater treatment facility, existing industrial space, utility substations and transmission lines, and a 360-million-gallon containment pond – to create a platform for large-scale renewable energy and alternative fuel projects.

Forsite Development has started redevelopment efforts at the site, turning the area into ReVenture Park. The project is home to a biomass combined heat-and-power project, an algae-to-fuel pilot plant, a fuels and lubricants distributor, a composite walls contractor, a composting operation, greenhouse facility and a 35-acre aquaculture project, among others. These businesses and their economic beneficial effects are described below. Beyond current on-site business operations, there are seven additional buildings offering nearly 120,000 square feet of available space for future redevelopment. Additional building sites are also available for commercial, industrial, office, retail and residential development.

Figure 5. Sign at the entrance to ReVenture Park on site.

Commercial/Industrial Use

B&B Oil Company, Inc.

B&B Oil distributes quality fuels and lubricants, including on-road and off-road diesel fuel, heating and generator fuel, bio-diesel, gasoline, kerosene, mineral spirits, diesel exhaust fluid and anti-freeze. B&B provides fuel for emergency and disaster response companies, delivering any amount in trucks, tanks, and trailers for fueling generators and equipment during disaster cleanup throughout the southeast United States.

B&B Road Technologies was created for distributing and applying rejuvenator seals for asphalt pavements and dust control/soil stabilization sealers for unpaved roads and industrial yards. B&B's pavement services have allowed county and city agencies and private associations to develop cost effective asphalt maintenance programs. B&B's dust control and soil stabilization services have solved dust and erosion problems for counties, cities, lumber yards, railroads, steel yards, haul roads, and many other industries. Jobs at the on-site business contribute over $320,000 in estimated annual employment income to the community.

BioEnergy Farms

BioEnergy Farms plans, implements and manages research projects involving agricultural, horticultural, forestry, aquaculture and composting operations in North Carolina and South Carolina. BioEnergy Farms' primary location is on site, where they have transformed 320 acres into fields of energy crops for renewable energy and fuel projects. The firm generated $212,000 in estimated annual sales during 2017.

Clean Energy LLC

Clean Energy operates two Caterpillar generator engines that run on bio-directed landfill gas at a total electrical output of 3.6 megawatts. Additionally, about 18.5 million British thermal units of waste heat from operation of these engines is used in an on-site aquaculture project growing duckweed as a high nutrient compost component for thermal renewable energy credits. Operating year-round with an average uptime of more than 92 percent, annual production is almost 30,000 megawatts of electricity and 150,000 million British thermal units of used waste heat. The firm contributes over $277,000 in estimated annual employment income.

Composite Wall Systems Inc. (CWSI)

Composite Wall Systems Inc. is a drywall and paneling design and installation company. CWSI also provides a variety of general construction, plumbing, and heating, ventilation, and air conditioning (HVAC) services. The firm contributes over $900,000 in estimated annual employment income.

Innovative Cooling & Equipment (ICE)

Innovative Cooling & Equipment offers innovative solutions for the commercial and light industrial refrigeration markets. With facilities in three countries, ICE provides visionary and state of the art commercial refrigeration equipment. ICE's North American headquarters at ReVenture Park manufactures a variety of condensing units and racks, including remote condensers, evaporators and pre-coolers. The firm contributes nearly $240,000 in estimated annual employment income and generated $877,000 in estimated annual sales during 2017.

MEVA Formwork Systems

MEVA Formwork Systems (MEVA) is a family owned and managed manufacturer of formwork technology. MEVA's logistic center is located at ReVenture Park. Headquartered in Germany, MEVA produces and refurbishes formwork systems in 40 locations in 25 countries. MEVA offers a comprehensive product portfolio covering all formwork requirements from foundation to high-rise, from hand-set formwork to automatic climbing technology. Many MEVA inventions and developments have become industry standard, such as the clamp and the closed hollow frame profile. The firm contributes over $400,000 in estimated annual employment income and generated $1,984,000 in estimated annual sales during 2017.

National Gypsum

National Gypsum is one of the largest gypsum board producers in the world. The company uses warehouse space at ReVenture Park for storage and staging of products from their Mount Holly, North Carolina, manufacturing facility. Headquartered in Charlotte, North Carolina, the company is a full-line supplier, recognized in the industry

for customer service and product quality. National Gypsum manufactures Gold Bond® gypsum board, ProForm® finishing products, and PermaBase® cement board.

New Line Transport

New Line Transport provides dependable delivery of building materials throughout the Southeast with a fully rigged flatbed fleet. New Line occupies the former truck shop on the ReVenture campus to provide maintenance and repair support to their vehicles in the Charlotte, North Carolina, area. The firm generated $155,882 in estimated annual sales during 2017.

Natural Areas and Recreation

A 185-acre conservation area enhances the site's natural resources, covering about 30 percent of ReVenture Park's land area. The easement protects a wide swath of natural area on both sides of Long Creek and nearly 1.4 miles of Catawba River frontage. Forsite Development and Clariant worked with the Catawba Lands Conservancy to develop the easement. ReVenture Park also secured a Wildlife and Industry Together Certification with the North Carolina Wildlife Federation. This collaboration includes wildlife habitat enhancement projects throughout ReVenture Park.

Projects on the site include wildlife habitat, stream restoration, and a trail system connecting the Carolina Thread Trail, a regional network of greenways, trails and blueways, across the site to the nearby U.S. National Whitewater Center. There is also a fully vegetated pollinator garden on the site. Wildlife on site includes osprey, white egrets, bald eagles, kestrels and wild turkeys.

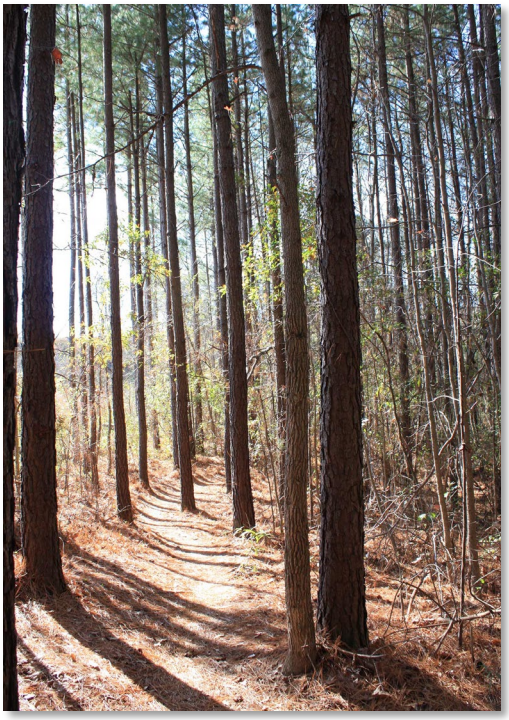

Figure 6. A forested trail.

"ReVenture is a unique opportunity for private investment, public policy and environmental stewardship to intersect and promote Charlotte's clean energy economy."

- Tom McKittrick, President, Forsite Development, Inc.

Property Values and Tax Revenues

The on-site property helps generate property tax revenues that support local government and public services. In 2017, the site property had a value of over $4.5 million. In 2017, the site property generated nearly $50,000 in total property tax revenues. On-site businesses also generate tax revenues through the collection of sales taxes, which support state and local governments.[1]

[1] The Mecklenburg County sales tax rate is 7.25 percent, which includes the 4.75 percent North Carolina state rate plus local rates. For more information, see https://www.ncdor.gov/taxes/sales-and-use-taxes/sales-and-use-tax-rates/sales-and-use-tax-rates-effective-april-1-2017.

Figure 7. Clockwise from top left, pollinator habitat at ReVenture Park, a sign for the Wildlife and Industry Together Certified Site and a view of the Catawba River and a trail.

Benefits of Green Space at Superfund Sites

Open green spaces at Superfund sites can be used to support a wide range of reuse activities including recreational, ecological and agricultural use. Careful planning can enable the integration of green spaces into site cleanup plans, resulting in the transformation of contaminated properties into valuable community assets. Green spaces are integral components of sustainable communities – they can help protect the environment and human health while providing other social and economic benefits. Parks, community gardens and other public green spaces create opportunities for people to gather, exercise and connect with nature. The creation of green spaces at once-contaminated properties can serve to re-introduce ecosystems and biodiversity into urban and suburban landscapes by providing corridors for migrating species and preserving habitat. They can also help mitigate stormwater runoff problems by slowly absorbing and naturally filtering stormwater, resulting in improved water quality due to decreased runoff and erosion. Parks, natural areas and scenic landscapes also have great economic value - supporting regional economies through tourism, agriculture and other activities. Economic impacts of recreational activities can include outdoor recreation spending and reduced public costs related to healthcare and infrastructure. Protected green space can also increase the property values of nearby homes by providing amenities that draw people to live and work in the community. To learn more visit EPA's Smart Growth website at https://www.epa.gov/smartgrowth.

Conclusion

Collaboration and cooperation among EPA, the state, site owners and developers was vital to the successful cleanup and beneficial reuse of the Martin-Marietta, Sodyeco, Inc. Superfund site. The carefully designed cleanup not only protects public health and the environment, but also took the safety of future development at the site into consideration. Clariant and Forsite Development focused on making sure reuse plans were compatible with the site's cleanup. The companies committed to maintaining the site's remedy and putting land use controls in place for commercial and industrial uses. By reclaiming, restoring and reinventing this industrial area, ReVenture Park is seeking to become a national model for innovative redevelopment and one of the leading renewable energy projects in the United States. When fully developed, it is anticipated that ReVenture Park will generate an estimated $900 million in new investment and create more than 1,000 jobs. The project illustrates how EPA and its partners can work together to protect human health, advance environmental protection and help communities turn Superfund sites into valued assets.

This once-contaminated area now supports businesses that provide jobs and services to the community and strive to do so in environmentally conscious ways. Today, on-site businesses support local economic growth, providing about 30 jobs and over $2.2 million in estimated annual employee income. In 2017, on-site businesses generated more than $3.3 million in sales revenue.

For more information about EPA's Superfund Redevelopment Initiative, visit: https://www.epa.gov/superfund-redevelopment-initiative.

Technical Appendix

Employment Information for On-Site Jobs

EPA obtained the data included in this appendix directly from reputable sources and reported the data as presented by those sources. Information on the number of employees and sales volume for on-site businesses typically comes from the Hoovers/Dun & Bradstreet (D&B) database.[1] D&B maintains a database of over 300 million businesses worldwide. When Hoovers/D&B database research was unable to identify employment and sales volume for on-site businesses, EPA used the ReferenceUSA database.[2] In cases where ReferenceUSA did not include employment and sales volume for on-site businesses, EPA used the Manta database.[3] These databases include data reported by businesses. Accordingly, some reported values might be underestimates or overestimates. In some instances, business and employment information came from discussions with business representatives. While sales values typically exceed estimated totals of annual income, sales can sometimes be lower than estimated income. This could be attributed to a number of business conditions and/or data reporting.

Wage and Income Information for On-Site Jobs

EPA obtained wage and income information from the U.S. Bureau of Labor Statistics (BLS). Part of the U.S. Department of Labor, the BLS is the principal federal agency responsible for measuring labor market activity, working conditions and price changes in the economy. All BLS data meet high standards of accuracy, statistical quality and impartiality.

EPA used the BLS Quarterly Census of Employment and Wages database to obtain average weekly wage data for businesses at the Martin-Marietta, Sodyeco, Inc. Superfund site. Average weekly wage data were identified by matching the North American Industry Classification System (NAICS) codes for each type of business with weekly wage data for corresponding businesses in Mecklenburg County. If weekly wage data were not available at the county level, EPA sought wage data by state or national level, respectively. In cases where wage data were not available for the six-digit NAICS code, EPA used higher-level (less-detailed) NAICS codes to obtain the wage data.

[1] http://www.dnb.com
[2] http://resource.referenceusa.com
[3] https://www.manta.com

To determine the annual wages (mean annual) earned from jobs generated by each of the selected businesses at the Martin-Marietta, Sodyeco, Inc. Superfund site, EPA multiplied the average weekly wage figure by the number of weeks in a year (52) and by the number of jobs (employees) for each business.

Table 1. Martin-Marietta, Sodyeco, Inc. Superfund Site: Information for On-Site Organizations and Businesses

On-Site Business	NAICS Code	NAICS Title	Number of Employees[a]	Average Weekly Wage (2017)[b]	Annual Wage (Mean Annual) per Employee	Total Annual Employee Income[c]	Annual Sales (2017)[d]
B&B Oil Company, Inc.	424720[e]	Petroleum and Petroleum Products Merchant Wholesalers	4	$1,539	$80,028	$320,112	NA
BioEnergy Farms, LLC	111998[f]	All Other Miscellaneous Crop Farming	1	$566	$29,432	$29,432	$212,000[f]
Clean Energy	221118[g]	Other Electric Power Generation	2	$2,666	$138,632	$277,264	$123,399[g, h]
CWSI (Composite Wall Systems, Inc.)	236220[e]	Commercial and Institutional Building Construction	10	$1,782	$92,664	$926,640	NA
ICE (Innovative Cooling & Equipment)	238220[f]	Plumbing Heating & Air-Conditioning Contractors	4	$1,140	$59,280	$237,120	$877,000[f]
MEVA Formwork Systems	332312[e]	Fabricated Structural Metal Manufacturing	8	$992	$51,584	$412,672	$1,984,000[i]
National Gypsum	327420[e]	Gypsum Product Manufacturing	0[j]	$1,355	$70,460	NA	NA
New Line Transport	484121[e]	General Freight Trucking, Long-Distance, Truckload	1	$873	$45,396	$45,396	$155,882[i]
Total			30			$2,248,636	$3,352,281

[a] Employee numbers for all site businesses provided by Forsite Development Inc. in August 2018.
[b] Average weekly wage per employee based on BLS 2017 Average Weekly Wage data.
[c] Total annual employee income figures derived by multiplying "Number of Employees" by "Annual Wage (Mean Annual) per Employee."
[d] Sales values are provided by D&B, unless otherwise noted.
[e] NAICS code assumed, based on business type.

[f] Information obtained from the ReferenceUSA database.
[g] Information obtained from Manta.
[h] While sales values typically exceed estimated totals of annual employee income, annual reported sales can sometimes be lower than estimated annual income. This atypical condition of estimated income exceeding sales can be a result of business conditions, estimated business wages not accurately reflecting actual wages for the site-specific business, annual sales being under-reported, a business loss for the year or a combination of those factors.
[i] Annual sales value calculated using the "Sales Per Employee" method. In cases where information sources do not provide annual sales data, an estimated annual sales value was calculated using the "Sales Per Employee Method". This method involves dividing the company-wide sales value by the number of employees that work at all branches of the business. That value equals an estimated business sales value per employee for the entire company. That value is then multiplied by the number of employees at the on-site business location to calculate an estimated annual sales value for the site-specific business location.
[j] National Gypsum uses warehouse space at ReVenture Park for storage and staging of products from their Mount Holly, North Carolina manufacturing facility. Personnel are shared with the main Mount Holly warehouse; no employees are based on site.
NA = Not available

Property Values and Local Tax Revenue Generated from Property Taxes

EPA obtained data on the most recently assessed values for the property parcel at the Martin-Marietta, Sodyeco, Inc. Superfund site in August 2018 through property records accessible through Mecklenburg County's online property appraisal database (https://property.spatialest.com/nc/mecklenburg/). EPA also obtained 2017 property tax information for the site parcel.

Table 2. Property Value and Tax Summary for Taxes Payable in 2017

Parcel ID No.	Parcel Address	Total Market Value of Land and Improvements (2017)	Total Property Tax (2017)
05305102A	11823 Mt Holly Rd, Charlotte, NC 28214	$4,503,200	$49,999.03