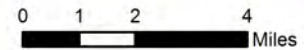


# Introduction

Beginning in 1914, steel manufacturing operations thrived in an industrial area north of Indianapolis. At one point, the Continental Steel Corporation was the largest employer in Kokomo, Indiana. The plant produced nails, rods, wire and fencing from scrap steel. The corporation continued to operate through the Great Depression and provided materials for the military during the Second World War. For nearly 70 years, facility operations contaminated the site and nearby soil, sediments, surface water and groundwater. A stream was left polluted and lead was found in nearby residential yards. The corporation declared bankruptcy and closed in 1986. In 1989, EPA listed the site on the Superfund program's National Priorities List (NPL). A long-term environmental cleanup by EPA and the Indiana Department of Environmental Management (IDEM) followed. Today, the site is now a valuable community asset. This case study tells the remarkable story of the cleanup and reuse of the Continental Steel Superfund site.

Returning the site to productive use was a long road for the community. As a major employer in the region, the impact of the shuttered Continental Steel factory was felt across Kokomo. The scope of the cleanup over nearly two decades required persistence and flexibility on the part of local leaders and agency partners. Kokomo city government (the City) worked diligently to plan for redevelopment, leveraging resources and forging partnerships. By planning for redevelopment during the cleanup, forward-thinking decisions laid the groundwork for the site's successful redevelopment of the blighted land and provided new hope for the community.

Today, the site has been cleaned up and returned to a range of beneficial uses. The Wildcat Creek Soccer Complex provides recreation opportunities. A solar energy array provides enough energy to power up to 1,000 homes. Cleanup of Wildcat Creek allowed for flood mitigation and boat ramp access. In turn, improved water quality means that people can once again fish and canoe in the area. Other redevelopment outcomes at



The site is located in Kokomo, Indiana. It is part of a former industrial area in the southwest part of the city.

the site include a stormwater retention pond, wind turbines, landscaping and road infrastructure improvements.

This case study explores the tools and partnerships that have led to successful cleanup and mixed-use redevelopment of the Continental Steel Superfund site. The following pages trace the evolution of cleanup and reuse efforts, highlighting the Kokomo city government's leadership, project partnerships, and coordination of remedy and reuse considerations. The case study provides information and lessons learned for parties interested in Superfund site redevelopment, municipal improvements, recreation-based land revitalization and solar energy development.



Solar facilities at the Continental Steel site: from contaminated land to an energy-producing community asset. (Source: Kokomo Tribune and IDEM)

## Site History, Contamination and Remediation

Steel production took place on site for over 70 years. During the Second World War, the Continental Steel Corporation produced barbed wire, nails and sheet steel for military use and provided bulk material for products manufactured by defense industries. These products included fuel containers, bombs and landing mats for air strips. It is believed that steel produced at the plant provided material for the Golden Gate Bridge and fencing for the world's fair in Chicago. Facility activities ranged from melting scrap metal to manufacturing finished products from start to finish. Operations included reheating, casting, rolling, drawing, pickling, annealing, hot-dip galvanizing, tinning and oil tempering. Facilities at the site included stock yards, water towers, rail yards, soaking pits, acid lagoons and 64 buildings. The buildings included mills, offices, laboratories and factories.

Improper materials handling and waste disposal practices and regular facility operations at the 183-acre site resulted in extensive contamination of soil, sediments, surface water and groundwater with volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs) and several metals, including lead, arsenic, cadmium and chromium. Sampling also detected lead contamination in some nearby residential soils. EPA placed the site on the NPL in 1989.

To address immediate risks to the surrounding community, IDEM and EPA removed and treated contaminated soils, oil and buried drums. By 1992, removal actions were complete. The agencies also decontaminated an abandoned chemical laboratory and dredged the lagoon and creek areas. In 1996, EPA and IDEM signed an agreement to decontaminate and demolish buildings in the main plant area, including asbestos abatement.

In 1998 EPA issued a Record of Decision that selected the site's long-term remedy. To manage the cleanup, EPA divided the site into six areas, or operable units (OUs), and chose a remedy for each area:

- **OU1 (Site-wide Groundwater):** groundwater collection and treatment.
- **OU2 (Lagoon Area):** excavation, filling and capping.
- **OU3 (Wildcat and Kokomo Creeks):** creek dredging and containment of contaminated materials.
- **OU4 (Markland Quarry):** excavation, filling and capping.
- **OU5 (Main Plant Property):** building demolition and capping.
- **OU6 (Slag Processing Area):** ground leveling, capping and creek bank stabilization.

EPA and IDEM led the 12-year cleanup. During cleanup, the agencies worked with the community and developers to support the return of parts of the site to productive use (see page 3). The \$40 million cleanup finished in 2011. Groundwater treatment and monitoring is ongoing. IDEM will take over management of the treatment system and some other operation and maintenance responsibilities in 2021. The City will also be responsible for some of the operation and maintenance responsibilities at the site.



Top: Manufacturing facilities in operation on site, circa 1970. (Source: Kokomo Tribune)

Bottom: Factory floor workers in action at the site. (Source: Kokomo Tribune)

# Project History

## **Initial Reuse Considerations and Site Acquisition**

When the Continental Steel Corporation closed its doors in 1986, it left behind a vacant, contaminated property. After EPA placed the site on the NPL in 1989, a decade of site investigations, interim cleanups and long-term cleanup planning followed. Throughout the process, Kokomo city government played an active role in planning for the site's reuse, with the City's development department considering options even before the locality acquired the site property.

Demolition and decontamination of the plant began in 1999. At the time, there was growing interest in reuse and revitalization of contaminated lands nationwide. EPA began offering pilot grants to support community-based reuse planning efforts in each of EPA's 10 regions. The City applied for and received one of EPA's second-round pilot grants in 2001 – it provided \$100,000 for site reuse planning efforts. EPA Region 5 Superfund Redevelopment Coordinator Tom Bloom recalled what set the community apart from other applicants. "It was remarkable, the City had such an organized development department that their proposal didn't call for any administrative expenses," he said. "All of the pilot money would go toward producing a conceptual plan. That really caught our eye." Grant money was used to hire consultants to work with the community to determine what they would like the site to look like.

## **Integrating Cleanup and Reuse Considerations**

The City finalized the site's reuse plan in 2004. Though not outlined in the site reuse plan, later redevelopment focused on OU5, the former main plant area, as a solar energy facility. It also called for development of a soccer complex on OU2, the former lagoon area. Coordination with EPA and IDEM meant that the conceptual plan took site features and cleanup considerations into account. With half of the site located in a floodplain, for example, it called for adequate backfill and drainage to make sure that flooding would not impact site reuses. EPA and IDEM expertise also helped inform the plan's development. "A similar site in Indianapolis had just completed a solar project," recalled IDEM project manager Jessica Fliss. "We also knew of a site where soccer fields had been successfully installed over a 24-inch cover without an engineered cap." A follow-on traffic study by the City in 2005 enabled the local government to incorporate road and stormwater management infrastructure enhancements into the remedy.

As cleanup moved forward, EPA and IDEM highlighted areas as they became available for reuse. However, it would take more than a decade for reuse to flourish. The City first

needed to work with Howard County and EPA to address its environmental liability concerns.

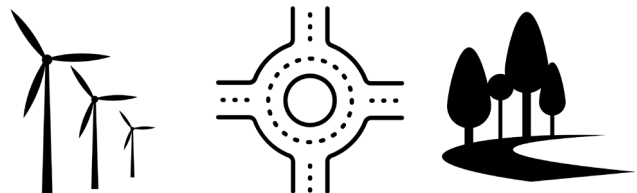
## **City Acquisition of the Site Property**

In 2013, the City acquired the site property for \$5,000 from Howard County at a special commissioners' tax certificate sale. The transaction marked the end of nearly 10 years of legal discussions between the City, Howard County and EPA to make sure the locality was protected against potential environmental liabilities. EPA provided the City with comfort letters specifying that the site's remedy was compatible with planned uses. "There was an abundance of caution. Liability after contamination was a big issue for the City to deal with," city engineer Carey Stranahan recalled. "Ultimately, the City decided it would have to acquire the site in order to put the land back into use. The City stepped up as a leader."

Within three years, large parts of the site would be returned to beneficial use. The next section discusses how cleanup and reuse considerations came together for each part of the site.

***"This isn't just a story about turning a contaminated site into a solar plant. The City worked hard and didn't give up. Their long-term thinking led to recreation and business opportunities as well as the elimination of flooding through their thoughtful planning of the remedy and reuse. The result is an impressive example of a site with multiple reuses."***

– Tom Bloom, EPA Region 5  
Superfund Redevelopment Coordinator



## Site Reuses, by OU

### **OU1 (Site-wide Groundwater)**

In 2009, EPA received almost \$6 million in American Recovery and Reinvestment Act (ARRA) funding, accelerating groundwater cleanup and providing local employment. In total,

15 Indiana contracting firms were involved, creating at least 45 short-term jobs. Today, three wind turbines provide up to 60 percent of the energy needed to power the groundwater extraction system.

Other redevelopment improvements for OU1 included a traffic system redesign that was put in place at the same time as the groundwater extraction system. A traffic circle at the junction of Markland Avenue and Park Avenue improves the flow of traffic at one of the busiest intersections in the area and helps address flooding concerns. The \$2 million circle helps the flow of traffic by removing the need for a traffic signal. As outlined in the site's soil management plan, the circle's raised design meant that contaminated soil could be left undisturbed under a cover. During construction, the City also added new trees and landscaping to the area.



### OU2 (Lagoon Area)

Toward the end of the OU2 cleanup, the City unveiled reuse plans for a 60-acre soccer facility – the Wildcat Creek Soccer Complex. Coordination with EPA and IDEM meant that after the cleanup was finished, the agencies planted the right kind of turf grass for the soccer fields over the cap covering residual soil contamination. The Indiana Office of Tourism Development awarded the Kokomo-Howard County Convention and Visitors Bureau a \$50,000 grant to build a facility with a concession stand, bathrooms and storage for maintenance equipment.

Project stakeholders believe the facility will enhance recreation and outdoor opportunities in the community. “For decades to come, the Wildcat Creek Soccer Complex will serve Kokomo and the region’s demand for youth soccer facilities,” said Kokomo Mayor Greg Goodnight. “Our community has waited a long time for this land to be put back into use, and I could not have imagined a better outcome.”

Plans for the Complex include 30 full-size playing fields and vehicle parking and may include a future connection to the Wildcat Creek Walk of Excellence recreation trail. The Kokomo Soccer Club will lease the Complex when construction is complete. To date, four full-size fields, parking lots and a concession stand have been built. The Kokomo Soccer Club held the first youth soccer match at the Complex in October 2015. Future enhancements could include additional walking trails and more parking.

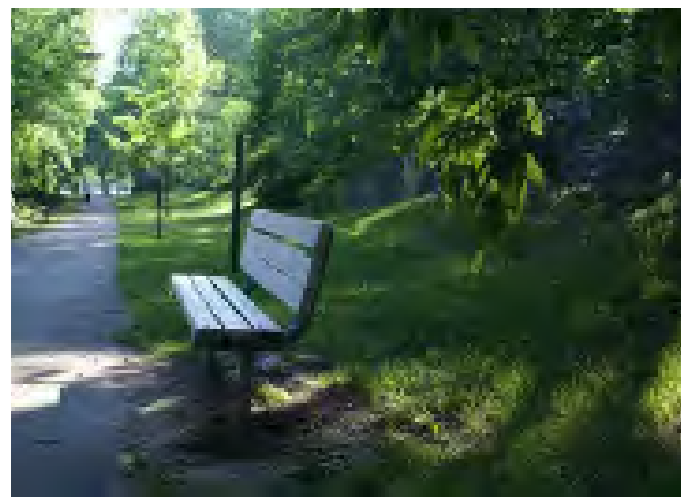
### WILDCAT CREEK SOCCER COMPLEX



**LEGEND:**

a. Practice Area/Overflow Parking	f. Internal Paths (1,950 LF Approximately)	k. Championship Field U-13+
b. Parking Lot "A" (200 Spaces, 6 ADA Spaces)	g. ADA Ramp along Hillside	l. Championship Field U-12
c. Parking Lot "B" (200 Spaces, 6 ADA Spaces)	h. Well Monitoring Station	m. 6 U-6 Fields (or 5 U-8 Fields)
d. Drop Off Zone	i. Concession Stand with Drive Access	n. 4 U-13+ Fields (or 4 U-12 Fields)
e. Perimeter Path (1.25 Miles Approximately)	j. Storage Barn	o. 12 U-10 Fields (or 7 U-12 Fields)
		p. 6 U-8 Fields (or 9 U-6 Fields)

Conceptual plans for the Wildcat Creek Soccer Complex.



In the future, a walking path on the west side of the Wildcat Creek Soccer Complex could connect to the 3.4-mile Wildcat Creek Walk of Excellence. The trail shown above is wide and flat, providing opportunities for walking, hiking, running, bicycling and roller blading. (Source: City of Kokomo)



### **OU3 (Wildcat and Kokomo Creeks)**

Cleanup at OU3 involved creek cleanup and flood mitigation. Dredging the creeks for contaminated soil improved water quality and reduced PCB levels in fish tissue samples. The community now uses the creek for recreation. “Before you would have never even thought about going near the creek, let alone fishing in it,” said city engineer Carey Stranahan. “The cleanup helped to improve water quality and meet regulatory standards. People practice catch-and-release fishing and schools use the creek for canoeing. The City is working on a riverwalk path downtown and having a clean creek really helps with that. The creek is now a community asset rather than an environmental burden.”

After the creek cleanup, a boat ramp and parking area were put in to facilitate access to the water. A joint effort by the Wildcat Guardians, the City, Martin Marrieta Aggregates and the Northern Indiana Public Service Company (NIPSCO) made the project possible. The City owns the land and contributed materials and labor to build the access point. Martin Marrieta Aggregates provided materials and NIPSCO contributed \$5,000 through its Environmental Action Grant program. The Steel Mill Public Access Point is located on Park Road, south of the intersection of Park and Markland avenues. The area includes a gravel parking lot and walkway to the creek for fishers, kayakers, canoeists and other outdoor recreation enthusiasts.



Members of the Wildcat Guardians were joined by officials from the City and NIPSCO during a dedication ceremony for the Steel Mill Public Access point on Wildcat Creek. (Source: Wildcat Guardians)



New signage for the Steel Mill Public Access Point. (Source: Wildcat Creek Guardians/Lance Shelby)



### **OU4 (Markland Quarry)**

Redevelopment success at the former Markland Avenue Quarry is providing a range of benefits, and is also the result of sustained local, state and federal coordination. At the time of the cleanup, the City was building a retention pond in another location to separate stormwater and raw sewage. The City needed a place to dispose of the unwanted fill material left over from the pond installation. At the same time, EPA and IDEM needed material to fill the deep quarry. EPA was able to use the fill, saving the City the time and expense of disposing of the material. Using the fill material saved EPA an estimated \$5 million and accelerated the cleanup schedule.

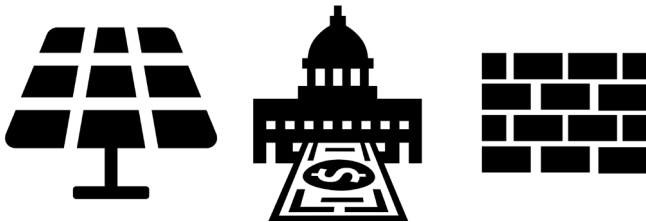
Final plans called for grading the former quarry area so that a stormwater retention pond could be located there. OU4 cleanup finished in 2009. Today, this pond, collects clean stormwater, helping to mitigate flooding in an area that has experienced two 100-year floods in the last two decades. IDEM worked with the City to plant prairie grasses, native plants and trees on the property.

## Lessons Learned at the Markland Quarry

When EPA project manager Nabil Fayoumi thinks back on the OU4 cleanup, his advice is simple. “Expect the unexpected and be flexible,” he said. “The quarry was 5 acres in size, 80 feet deep and full of water. Our plan was to use a hydraulic dredger – basically a big vacuum – to suck everything up. When cleanup began, we discovered drums, metal debris and cars at the bottom of the quarry. We changed plans. We pumped the quarry dry, then took out the trash. It took over a month to dewater the quarry. We even found unexploded ordnance at the bottom.”



(Source: IDEM)



### OU5 (Main Plant Property)

In June 2016, the Kokomo Plan Commission approved construction of a \$9 million solar array on 25 acres at OU5. Inovateus Solar and Alterra Power Corp. coordinated closely with the City, IDEM and EPA on the project’s design and construction to make sure it was compatible with other site uses and the site’s remedy; the solar array began operating in December 2016. The array consists of over 21,000 fixed photovoltaic panels, making it one of the largest solar arrays in Indiana. Alterra manages the project and sells the energy produced to Duke Energy Indiana under a 20-year power purchase agreement. The array has a capacity of 7.2 megawatts and produces about 9.1 million kilowatt-hours of solar energy a year, enough to power up to 1,000 homes.

Inovateus Solar and Alterra Power Corp. identified the site for the solar project because of its existing energy infrastructure, the area’s high energy demand and the community’s support for the project. To address the developers’ concerns about the site’s



### Making the Grade: Key Criteria for Locating Solar Facilities at the Site

- Good sun exposure.
- Location near a power substation.
- High-frequency powerlines available from previous industrial activity.
- Competitive lease terms.
- No permits or rezoning necessary.
- Remedy in place.
- Construction ready.
- Approved soil management plan in place.



(Source: IDEM)

Superfund status, EPA and IDEM helped them understand the cleanup and how to adapt their approach to fit with remedial constraints on the property. EPA also issued a comfort letter for future owners or leasers. A restrictive covenant limits operator liability as long as the cap is maintained and any work on the site is pre-approved. To gain approval, developers had to ensure the solar panels would not disturb the 18-inch soil cap that was part of the site’s remedy. Inovateus Solar worked with EPA to design a racking foundation for the solar panels that minimized their impact on the cap. The panels are mounted to a single-axis tracking system, allowing them to follow the sun’s path throughout the day.

Today, the solar array has revitalized part of the site that was vacant for decades; it now provides long-term economic benefits for the City. The City receives revenue from the facility’s \$36,000 annual lease agreement and saves money in reduced maintenance costs as well. Inovateus Solar is responsible for maintaining the cap, mowing the grass and regularly checking the solar array. The area is fenced; cameras enable remote monitoring of the area. Based on community feedback, EPA also retained and reinforced a wall in the northeast corner of OU5. The wall provides a privacy screen and serves as a reminder of the plant’s history.

***“The City was very open and cooperative with us. They really wanted to see this project move forward. After the close of the Continental Steel plant, Kokomo went through a difficult time. It was great to see renewable energy coming into the area and providing new opportunities.”***

– Nathan Vogel, Inovateus Solar



***OU6 (Slag Processing Area)***

The former slag processing area at OU6 has been cleaned up. It is the only OU at the site not yet in reuse. Located next to Wildcat Creek, future uses could include a boat launch or camping area.

## Continental Steel Corporation: From Boom to Bust

At the height of its operations, with over 3,000 employees, the Continental Steel plant was the largest employer in Kokomo. The company survived the Great Depression and thrived during the Second World War, producing metal and other products in support of the war effort. At one point, the company produced about 90 percent of nails made in the United States. During the 1960s, the company diversified its operations, producing a wide range of products, including fences, gates, posts, welded wire fabric, nails, wires, clothes lines, rivets and copper steel sheets. The 1970s marked the start of the company's decline, as it struggled to modernize its facilities and compete in the global marketplace. In 1986, Continental Steel Corporation filed for bankruptcy. More than 700 people lost their jobs.



***“When the plant was torn down, it was a big deal. Many retired folks wanted to see it come down. IDEM built a platform for people to sit and observe. It was emotional. The fact that we could help make something positive out of the site after it being a wound for the community for so long, that was a really good feeling. I’m glad we could help make this happen.”***

– IDEM project manager Jessica Fliss



Top Left: 1944 Kokomo parade. Middle: Workers strike in 1971. Bottom Left: A worker at the factory, circa 1970. Bottom Right: Hundreds of former employees continue to meet up at reunion picnics. Some of the workers were employed on site for decades. (Source: Howard County Historical Society and Kokomo Tribune/Sarah Stefko)



# Recognizing Site Successes

In April 2017, EPA and IDEM officials joined Kokomo Mayor Greg Goodnight, city staff, community members and Inovateus Solar representatives for a ribbon-cutting ceremony and a tour of the new solar farm on the site. At the ribbon-cutting ceremony, EPA Region 5 gave out its second RENEW Award in recognition of excellence in site reuse. “We are happy to partner with Inovateus Solar to continue Kokomo’s trend of transforming underutilized sites into assets,” Mayor Greg Goodnight said. “This project has been years in the making and started when the area underwent a cleanup effort. The transformation from contaminated Superfund site to solar farm has been inspiring and a win for all involved.”

In 2018, EPA released a video celebrating the remarkable story of the cleanup and reuse of the Continental Steel Superfund site. The video features the 2017 award ceremony and highlights the site’s many uses, including views of the solar farm, the Wildcat Creek Soccer Complex and other site features. The video is available online at [youtu.be/NwCUdX4idAc](https://youtu.be/NwCUdX4idAc).



Councilman Thomas Miklik and EPA Region 5 acting superfund director Margaret Guerriero at an award ceremony for the solar plant. (Source: EPA)



**Legend**

- Areas of Reuse
  - +— Railroad
- 0 300 600 1,200 Feet

The site’s location and terrain were suitable for multiple uses.

# Looking to the Future

As of 2017, tax assessors valued the site at \$2,231,400, a massive gain from the \$5,000 the City paid for the property in 2013. While a wide variety of redevelopment has already occurred at the site, the story is not over yet. Future plans call for canoe launching and camping areas, walking trails, additional sports fields, other recreation facilities and more parking. There is even room to expand the solar energy facility.



## Timeline of Events

1914-1986	Continental Steel Corporation operates a steel manufacturing facility at the site.
1984-1986	IDEM identifies groundwater and soil contamination at the site.
1986	Continental Steel declares bankruptcy.
1989	EPA places the site on the NPL.
1990	EPA completes removal actions to address immediate risks.
1993	EPA begins remedial investigations at the site.
1996	EPA and IDEM sign an agreement to decontaminate and demolish buildings in the main plant area.
1998	EPA selects final site cleanup plan.
1999-2000	Building demolition underway.
2001	EPA awards the City a \$100,000 reuse planning grant.
2004	Reuse plan report is completed.
2006	Community announces redevelopment plans for the site.
2009	Groundwater cleanup starts.
2011	Construction of the site's final remedy finishes.
2013	City acquires the site property.
2015	Kokomo Soccer Club hosts its first youth soccer match at the Wildcat Creek Soccer Complex.
2016	Kokomo Plan Commission approves construction of \$9 million solar facility and the solar array begins operating on site.
2017	EPA Region 5 presents its RENEW Award to site redevelopment partners.
2018	EPA releases a video highlighting site reuses.
2021	IDEM takes over management of the groundwater treatment system and site operation and maintenance responsibilities.

# The Continental Steel Site: The Story in Pictures

## Pre-Cleanup – Site in Operation



*Aerial view of the site in operation, date unknown. (Source: EPA)*

*Main entrance to Continental Steel Corporation facilities, date unknown. (Source: Kokomo Tribune)*



## Pre-cleanup - Site Abandoned



Abandoned administration offices, shipping offices and an abandoned steel cauldron on site, 1995. (Source: Howard County Historical Society)



Site buildings prior to demolition. (Source: Howard County Historical Society)



Aerial view of acid lagoons at OU2 in 1998. (Source: Kokomo Tribune/Sally Washburn)



*Aerial view of the site in 1998. (Source: Kokomo Tribune/Sally Washburn)*

## **Demolition Phase**



*Company sign taken down in 1999, marking the beginning of building demolition efforts. (Source: Kokomo Tribune)*



*Furnace building demolition. (Source: IDEM)*



*Demolition of the wire mill generated a huge cloud of dust. The wire mill was the largest building on site. (Source: IDEM)*



*Onlookers watch demolition efforts (left) and Building 5 asbestos removal (right). (Source: Howard County Historical Society/IDEM)*



*Demolition employee removes rebar after a large machine breaks up concrete walls. This building came down within seconds. (Source: Kokomo Tribune)*

## Before Redevelopment



*Future location of the site's solar array, 2003. (Source: Kokomo Tribune)*



*Sludge drying lagoon, 2007. (Source: Howard County Historical Society)*



## Redevelopment Preparations



*Preparations underway for solar panel installation, 2016. (Source: Inovateus Solar)*



*Workers installing a solar array, 2016. (Source: Kokomo Tribune photo)*



Future site of soccer fields. (Kokomo Tribune photo)

**Site Redevelopment *in Action***



Parking entry for the soccer complex on site. (Source: EPA)



*View of the solar array and surrounding areas. (Source: Inovateus Solar/Mike Robinson)*



*Stormwater retention pond on site. (Source: IDEM)*



*The Steel Mill Public Access Point provides recreational access to Wildcat Creek. (Source: Wildcat Guardians)*



*Ribbon-cutting ceremony at the solar plant, 2017. (Source: EPA)*

# Lessons Learned

City representatives and project partners identified several major factors that have been essential to the project's success.

- The City had a well-organized development department and pursued reuse planning grant opportunities early in the Superfund process.
- The City was patient, committed to working with project partners, and had a well-thought-out long-term plan for the site.
- The community was willing to consider a range of potential future uses for the site, including innovative renewable energy facilities.
- All project partners remained flexible, adapting plans to reflect the latest site information and requirements while always keeping big-picture goals in focus.
- The long-term, 20-year energy purchase commitment from Duke Energy made the site's solar array possible.
- EPA and IDEM provided tools to address parties' liability concerns and supported community reuse planning efforts throughout the Superfund process. The City in turn agreed to place environmental covenants on the site. This cooperation helped the agencies to have confidence in the long-term viability and protection of the remedy elements still in place.
- Sustained outreach efforts addressed local concerns about the cleanup and the safety of redevelopment efforts, building community support for the project.
- Redeveloping the site made financial sense and provided significant community benefits.
- EPA, IDEM and the City worked together to identify opportunities to accelerate cleanup timeframes and save money.

***“The process of working with local, state and federal partners went really well. IDEM, EPA and the City were great to work with. All of the parties involved wanted to see the project move forward. Effort on all sides was critical to the success of the project.”***

– Nathan Vogel, Inovateus Solar

## EPA and Reuse: Lessons Learned

Since the inception of the Superfund program, EPA has been building on its expertise in conducting site characterization and remediation to ensure that contamination is not a barrier to the reuse of property. Today, consideration of future use is an integral part of EPA's cleanup programs from initial site investigations and remedy selection through to the design, implementation, and operation and maintenance of a site's remedy.

“For more than two decades, EPA has worked with diverse stakeholders to make sure reuse considerations are taken into account during the cleanup process,” reflected Melissa Friedland, EPA's Superfund program manager for redevelopment. “Superfund cleanups can be creative and flexible in allowing for future site uses, but that information needs to be plugged in early to be as effective as possible.”

EPA also works with site stakeholders to consider how future land use considerations can inform the implementation and long-term stewardship of site remedies as well as cleanup planning. At some sites, for example, reuse considerations can inform the future location of groundwater monitoring wells and other operation and maintenance equipment that might inadvertently hinder redevelopment efforts. At other sites, detailed reuse plans have provided additional benefits that save time and reduce redevelopment costs. For example, future infrastructure corridors or building footers can be installed in coordination with site cleanup activities.



(Source: Inovateus Solar)

# Bigger Picture

While these site-specific conditions created an ideal climate for successful reuse outcomes, a range of broader lessons learned can also help guide similar projects at contaminated lands across the country.

## **EPA works with communities and stakeholders to support reuse outcomes that are compatible with site cleanups.**

The Agency places a high priority on supporting the return of contaminated sites to productive and beneficial uses. EPA worked with the City to provide reuse planning grant assistance in the early stages of cleanup to ensure the compatibility of future site uses with the site's remedy. Once the reuse plan was in place, EPA and IDEM provided ongoing support and assistance to integrate remedy and reuse considerations. Selecting turf grass for the protective cap, grading areas to reduce flooding and collect stormwater, and integrating traffic system improvements with remedy installation efforts are examples of this effort.

## **While EPA provides tools and resources to support Superfund reuse, communities and public- and private-sector organizations make it happen.**

EPA's mission is to protect public health and the environment. EPA relies on engaged community stakeholders to bring their future land use goals and priorities to the table so that this information can be incorporated as part of the remedial process, linking cleanup and redevelopment. At the Continental Steel site, city leaders leveraged resources and opportunities at the local, state and national levels to achieve their goals. The City was well organized, had a vision for the site's future and took a leadership role in making it happen by acquiring the site property. "Sometimes municipalities have to get involved in cleaning up land to make it ready for reuse. You can't just wait for a developer," noted city engineer Carey Stranaham. "You have to be proactive about cleaning up the land and getting it ready."

## **Effective reuse planning projects are inclusive, information-based and focused on targeted outcomes allowing a wide range of stakeholders to work together for a common goal.**

Community-based reuse planning processes can be most effective when they engage diverse stakeholders, are based on detailed site and community information, and lead to implementable strategies and next steps. "It was incredible

working with the City. They had a willingness to be creative and were also open and trusting with other agencies and the decision-making process," reflected IDEM's Jessica Fliss. "City staff worked hard and always had the best interests of the community in mind. This was one of my most positive working experiences." City staff recall strong working relationships with EPA and IDEM as well. "The agencies were great about responding to our plans and submittals," recalled Carey Stranaham. "They were realistic about expectations and made sure that cleanup requirements did not unnecessarily hinder potential redevelopment opportunities."

## **Think long term.**

It can take many years to remediate contamination that has accumulated over decades. These activities provide a time window for stakeholders to build partnerships and identify resources, coordinate with EPA and state agencies, and develop a strategy for returning a site to use while protecting future visitors. Cleanup efforts at the Continental Steel site took nearly 22 years; groundwater treatment and maintenance operations remain ongoing today. "Never give in, never give up. It takes a level of persistence and tenacity to make large-scale environmental cleanup and redevelopment happen because there can be so many roadblocks," said Kokomo City Councilman Tom Miklik. "But the outcomes are worth it."

# Looking Forward

The cleanup and redevelopment of the Continental Steel Superfund site illustrates how local leadership, collaboration with EPA and state and community partners, innovative thinking, and flexible planning can result in several major outcomes: the protection of human health and the environment, innovative cleanups, productive redevelopment, new community assets and long-term partnerships.

In Indiana, Kokomo city government has led a successful project aided by support from local, state and federal partners. The City's leadership has enabled a complex cleanup and restoration effort that brought together cooperative partners and resulted in an approach that can guide similar efforts in communities across the United States.



*(Source: Inovateus Solar/Mike Robinson)*

***“We are thrilled to continue the trend in Kokomo of transforming underutilized sites into assets. From contaminated Superfund site to solar farm, the land is now producing enough clean energy to power hundreds of homes.”***

*– Greg Goodnight, Kokomo Mayor*

# FROM STEEL TO SOLAR AND SOCCER: MIXED-USE REDEVELOPMENT IN INDIANA

THE CONTINENTAL STEEL SUPERFUND SITE IN KOKOMO, INDIANA

## Sources and Resources

### Sources

Images for this case study are provided courtesy of Kokomo city government, IDEM, EPA Region 5, Inovateus Solar, Wildcat Creek Guardians, the *Kokomo Tribune* and the Howard County Historical Society.

Maps for this case study were created with data from Google Earth, Esri, DeLorme, AND, Tele Atlas, First American, UNEP-WCMC and USGS.

### Resources

EPA site profile page:

[cumulis.epa.gov/supercpad/cursites/csinfo.cfm?id=0501228](http://cumulis.epa.gov/supercpad/cursites/csinfo.cfm?id=0501228)

EPA Superfund Redevelopment Initiative:

[www.epa.gov/superfund-redevelopment-initiative](http://www.epa.gov/superfund-redevelopment-initiative)

City of Kokomo:

[www.cityofkokomo.org](http://www.cityofkokomo.org)

Indiana Department of Environmental Management:

[www.in.gov/idem](http://www.in.gov/idem)

Howard County Historical Society:

[www.howardcountymuseum.org](http://www.howardcountymuseum.org)

Howard County Memory Project:

[www.howardcountymemory.net](http://www.howardcountymemory.net)

Indiana Historical Society:

[indianahistory.org](http://indianahistory.org)

Inovateus Solar:

[inovateus.com](http://inovateus.com)



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October 2018



In May 2017, EPA established a task force to restore the Superfund program to its rightful place at the center of the Agency's core mission to protect health and the environment.

[epa.gov/superfund/superfund-task-force](http://epa.gov/superfund/superfund-task-force)