Pittsburgh ENGINEER

FALL/WINTER 2024 - BROWNFIELDS

Mill 19 Then and Now

ESWP Annual Awards Banquet

Thursday, March 20, 2025

Westin Convention Center Hotel

Pittsburgh, PA

Be part of Western Pennsylvania's biggest Engineers Week celebration! Reserve your place now - individual and table reservations are available!

THE 42ND ANNUAL

The International Bridge Conference®

July 13–16, 2025

David L. Lawrence Convention Center

Pittsburgh, PA USA

Registration Now Open

Register now for early-bird discount rates at eswp.com/bridge

Sponsorships, Exhibits, and Outdoor Demonstration Opportunities are Now Open!

SAVE THE DATE

2026 PA Brownfields Conference

March 23-25, 2026

Wind Creek Bethlehem

pennsylvania DEPARTMENT OF ENVIRONMENTAL PROTECTION

WIND CREEK HOSPITALITY

ESWP

ENGINEERS' SOCIETY of WESTERN PENNSYLVANIA

SUMMARY

ON THE COVER

Pittsburgh's Mill 19 is only a recent example of brownfields coming back to life! See the full story inside this issue!

Find & Follow ESWP!

ESWP on X

ESWP on Facebook

ESWP on Linkedin

ESWP337

Pittsburgh ENGINEER is the on-line, quarterly publication of the Engineers' Society of Western Pennsylvania (ESWP). The opinions expressed herein are not necessarily those of the membership or management of the ESWP. Every effort is made to ensure accuracy, but we do not guarantee that there will be no errors. Past issues of the Pittsburgh ENGINEER are available on-line at eswp.com/eswp/publications. All content within is the property of the ESWP unless otherwise noted.

Advertising opportunities are available for the Pittsburgh ENGINEER can be found on our website, eswp.com

EDITORIAL

Redevelopment at Pittsburgh's Mill 19

The story of Pittsburgh, Pennsylvania is one of grit, determination, and industry. Industry in the sense of hard work, of course, but also in its more literal sense of manufacturing, of commerce. Pittsburgh has a proud history of industry, from boatmaking to distilling, from coal mining to the manufacture of glass, textiles, and furniture. Of course, it is best known for the steel industry that made its home there, providing steel to American infrastructure and jobs and economic stability to a citizenry that exploded in number throughout the 19th and 20th centuries.

But even an industrial powerhouse like Pittsburgh could not escape the downturn of American manufacturing in the 1970s and 80s. Manufacturing moved abroad, leaving thousands of people without jobs. Mines and factories were left to sit as empty eyesores – constant, hulking reminders of a more prosperous time.

It is a story that echoes through the streets of communities large and small all across the Commonwealth. Vacant buildings, empty lots filled with industrial waste, abandoned mines and processing plants. Communities left behind by a changing world, waiting to rise again.

Take, for example, the story of Hazelwood Green in Pittsburgh. Nestled along the banks of the Monongahela River, this 178-acre site was once the home of the Jones & Laughlin Steel Company. After decades of industrial use, the land was heavily degraded, and crumbling buildings and infrastructure made the area unsafe. The site was purchased by the Almono partners in 2002, and since then has been transformed into an incredible hub of progress. Hazelwood Green now hosts a variety of state-of-the-art facilities, including the University of Pittsburgh's biomanufacturing plant, the BioForge, along with Carnegie Mellon University's Robotics Innovation Center and Steelers Field, a multi-sport youth recreation and wellness facility. The site is also home to Mill 19, a three-building research and development hub that features one of the largest fixed-slope solar arrays in the country.

Troy Conrad
Directorof Environmental Cleanup and Brownfields
Pennsylvania Department of Environmental Protection

Hazelwood Green is just one of thousands of brownfields success stories. Brownfields are everywhere, and they aren't just the big, obvious sites. Any property whose redevelopment is complicated by the possibility of contamination is a brownfield, including car shops, dry cleaners, and gas stations.

The good news is that brownfields present an excellent opportunity for redevelopment. Prior development on the site often means that the site already has access to vital infrastructure like power, water, and the transportation network. This saves developers time and money that would otherwise have been spent creating brand new infrastructure for their project. Additionally, redevelopment allows vacant properties to be returned to the tax rolls, providing needed funding to local municipalities. It also increases the value and desirability of other nearby properties.

Exterior of Mill 19

The community-focused benefits cannot be neglected, either. Brownfield redevelopment protects human health and the environment by cleaning up legacies of contamination. Neighborhoods become more livable as eyesores are transformed into community assets. Many brownfield projects create jobs and housing, benefitting the economy and making towns more desirable places to live. Not to mention, building on brownfields preserves the greenspace that makes this Commonwealth beautiful.

To those of us in the brownfields industry, the benefits of brownfields are clear. But many others are unaware of brownfields or view them simply as a liability. This is why, in 1995, the Engineers' Society of Western Pennsylvania (ESWP) hosted the nation's first brownfields conference, named the Industrial Site Recycling Conference (ISRC). The ISRC brought together developers, real estate professionals, engineers, and more so they could network with each other and discuss how best to go about getting brownfields work done.

The Commonwealth of Pennsylvania's Land Recycling Program (LRP) hosted our own PA Brownfields Conference as well, early into the program's existence. The PA Brownfields Conference provided the LRP the opportunity to connect with the regulated community and to discuss important program and regulatory updates.

As time went on, ESWP and the LRP realized that hosting two separate brownfields conferences was unnecessary. If the point of holding a conference was to collaborate with other industry professionals, surely it would make sense to collaborate on hosting as well. So, in 2013, ESWP and the LRP joined forces to host their first joint conference in King of Prussia, PA. Now the ESWP audience could connect with LRP staff, and LRP's audience could learn from ESWP's industry professionals. Rather than two separate audiences, everyone interested and invested in the industry could come together to learn, discuss, and collaborate.

Working together also allowed the conference to expand in scope. The PA Brownfields Conference has hosted an incredible array of programs and events over the years. The conference regularly holds a Women in Brownfields session to both highlight the struggles faced by women in the industry and to celebrate their accomplishments. The Central Appalachian Brownfield Innovation Network (CABIN) regularly hosts a panel at the conference where stakeholders from across the Appalachian region discuss complex redevelopment issues and network with their peers, agency representatives, development professionals, and environmental experts to highlight success

stories from across the Central Appalachian region. Not to mention the welcome receptions hosted at businesses across the Commonwealth, showcasing what is possible with brownfields redevelopment.

The conference has also featured a number of fascinating speakers throughout the years, including Don Cunningham of the Lehigh Valley Economic Development Corporation, and Aaron Muderick of Crazy Aaron's Thinking Putty, and former City of Pittsburgh Mayor Thomas Murphy.

Today, the Pennsylvania Brownfields conference continues to provide a space for industry professionals across the Commonwealth to come together and collaborate on the latest and greatest in the world of brownfields. Knowledgeable speakers provide continuing education on emerging industry topics, from best practices to new and updated science. It also provides an opportunity to recognize and celebrate the hard work and incredible projects going on all across the Commonwealth. Most importantly, it gives us a chance to draw attention to the importance and viability of brownfields development.

The most recent PA Brownfields Conference was held in State College, PA in March of 2024. There had not been a conference since 2020, and it was wonderful to get everyone back together again. There was a lot of catching up to do, and the conference program delivered. Attendees enjoyed sessions on a variety of topics, including solar and clean energy on brownfields, abandoned mine lands, LRP program updates, environmental justice, and emerging contaminants, including PFAS. We also heard from fantastic speakers. EPA Region 3 Administrator Adam Ortiz joined PA DEP's Acting Executive Deputy Secretary Ramez Ziadeh to discuss recent brownfields work in Pennsylvania and to celebrate program success stories and recent achievements in funding. LRP's Mike Maddigan, PA Department of Community and Economic Development's Brian Eckert, and EPA's Susan Spielberger walked attendees through state and federal regulatory updates. Keynote speaker Joel Burcat, a former environmental lawyer and current author of environmental thrillers took us through the process of brainstorming a novel to highlight the power of telling a good story. The closing plenary speaker Matt Ward of Sustainable Strategies DC finished out the conference with a look towards the future of funding revitalization efforts.

The LRP and ESWP would like to thank everyone who worked to make the 2024 PA Brownfields Conference a resounding success. The hard work and dedication from those in brownfields are what makes this community so special. The next PA Brownfields Conference is currently being planned for Spring of 2026, and we look forward to seeing everyone again.

In the following pages, you will find a number of articles that give you a taste of what our conference has to offer. We hope you enjoy learning about or industry as much as we do.

Revitalizing Greene County: Transforming Brownfields into Community Assets

Gregory M. Firely, BCES

Greene County's Industrial Legacy

Nestled in southwestern Pennsylvania, Greene County boasts a rich history rooted in coal mining and industry. For decades, coal powered the local economy and shaped the county's identity. The mines provided steady employment, and the prosperity of the coal era was evident in the thriving towns that dotted the county. However, as coal's prominence waned, Greene County faced steep economic challenges. The shuttering of mines and related industries led to job losses and population decline, leaving behind a landscape marked by abandoned industrial sites. To combat these challenges, the Greene County Industrial Development Authority (GCIDA) was established with a mission to drive economic renewal and attract sustainable development.

The Brownfield Challenge

Among the hurdles facing Greene County are numerous brownfield sites—abandoned or underutilized industrial areas burdened with environmental contamination related to historic operations. These sites represent both a challenge and an opportunity. While their history ties them to the county's industrial past, their potential for redevelopment can spur future economic growth. One such site, the Gateway Forest Products property in Mather, exemplifies both the struggles and possibilities inherent in brownfield revitalization.

Gateway Site: From Coal to Creosote

- Early History: The Gateway site began as a coal mine and processing center in the 1920s, operating through the 1960s. During its heyday, the site played a central role in the local economy, providing jobs and supporting related industries.
- Repurposing: In 1975, Gateway Forest Products repurposed the site for creosote railroad tie treatment. This operation continued until 1984, when the company ceased operations and declared bankruptcy. The site was left littered with hazardous waste, including thousands of creosote-soaked railroad ties and deteriorating equipment.
- Environmental Impact: Over the years, the site became an environmental concern. The Pennsylvania Department of Environmental Protection (PADEP) issued multiple violations for hazardous spills and contamination. Cleanup efforts began in the 1990s, focusing on removing storage tanks and drums, but large portions of the 33-acre site were not investigated.

When GCIDA acquired the site in 2006, they envisioned converting it into a public recreational space. However, contamination levels restricted its use, and the presence of creosote ties across the site posed a massive cleanup challenge.

Overcoming Challenges Through Partnerships and Funding

Recognizing the need for a coordinated effort, the GCIDA pursued grants and partnerships to overcome the site's environmental challenges and repurpose the property for the benefit of residents. Brownfield redevelopment programs provided critical funding opportunities:

- PA's Industrial Sites Reuse Program (ISRP): This program provides up to $200,000 for site assessments and $1 million for cleanup efforts. Eligible grant

Mather Site, Morgan Township, Greene County, PA

applicants include local governments and authorities (e.g., Industrial Development, Redevelopment). The program requires a 25% matching contribution and, for cleanup grants, the applicant must own the site.

- EPA Brownfields Programs: The Environmental Protection Agency also offers grants for both assessment and cleanup. Eligible applicants include local governments and authorities as well economic development corporations and non-profits. EPA Brownfields Assessment grants may be used on sites the grantee does not own and are available for up to $500,000, with no match. The EPA Brownfields Cleanup grants have similar eligibility requirements and stipulate the applicant must own the site and have completed an ASTM compliant Phase I Environmental Site Assessment prior to taking ownership. EPA Brownfields Cleanup grants are typically up to $500,000 and require and 20% match. However, recently the limits have increased.

Key Milestones in Redeveloping the Mather Site

- Environmental Assessments (2014-2018): In 2014, GCIDA secured a $200,000 ISRP grant to conduct a comprehensive soil assessment, complemented by a $300,000 EPA Brownfields Assessment Grant in 2018. These assessments included soil sampling across 53 locations, analyzing for a range of contaminants, including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals. Many contaminants were found to not be present above regulatory levels, while others appear to have naturally attenuated. Arsenic and select organic contaminants under the creosote ties required further investigation. Importantly, the arsenic was determined to be naturally occurring through a PADEP-approved background investigation, clearing a significant hurdle.

- Creosote Tie Removal (2022-2023): In 2022, GCIDA received a $500,000 EPA Cleanup Grant to tackle the creosote ties. Approximately 1,653 tons of ties were removed and disposed of responsibly, clearing one-third of the affected area. Soil sampling beneath the ties identified several areas exceeding PADEP's non-residential standards, which were excavated and remediated. By November 2024, PADEP approved a final Act 2 Report, confirming that the site met non-residential standards.

Aerial image of Mather Site Rail Tie Piles 2019

Aerial view of Mather Site Rail Ties After Removal 2024

Approximately 1.25 acres of railroad ties remain on site and will be the focus of future development-related activity.

A Vision for Sustainable Development

With the cleanup advancing, the GCIDA attracted interest from a solar energy developer seeking former industrial sites for renewable energy projects. The Mather site, with its southern--facing slope and existing infrastructure, was an ideal location. A solar farm would not only repurpose the site but also symbolize Greene County's transition from coal dependency to clean energy leadership.

Overcoming Obstacles to Progress

The redevelopment of the Mather site has not been without its challenges. One significant obstacle was a procedural oversight: the lack of a Phase I Environmental Site Assessment (ESA) within one year of the site's acquisition rendered GCIDA ineligible for certain cleanup grants. To resolve this, GCIDA transferred the site temporarily to Morgan Township, completed the necessary Phase I ESA, and reacquired the site. This creative solution cleared the way for the successful application of the EPA Cleanup Grant in 2022.

Another hurdle was the scale of contamination. Removing the creosote ties and addressing underlying soil contamination required meticulous planning and adherence to PADEP standards. By employing a PADEP-approved random grid sampling method, GCIDA maximized the efficiency of soil assessments, ensuring (with reasonable certainty) no impacted areas were overlooked. The background standard work, which confirmed naturally occurring arsenic, played a pivotal role in streamlining the site's remediation process by removing the need for additional treatment of unaffected areas.

Community and Economic Impact

The revitalization of the Gateway site offers significant benefits for Greene County:

- Environmental Restoration: Removing contaminants improves soil and water quality, enhancing the natural ecosystem.
- Economic Opportunities: Transforming a blighted property into a productive asset creates jobs, attracts investment, and stimulates the local economy.
- Renewable Energy Leadership: A solar farm on the site would contribute to Pennsylvania's clean energy goals, reducing carbon emissions and promoting sustainability.
- Community Pride: The redevelopment signals progress and resilience, inspiring other projects across the county.

Looking Ahead

Despite significant progress, the journey to fully redevelop the Mather site continues. The GCIDA is actively exploring additional funding sources to complete the cleanup. A notable challenge is that EPA Cleanup Grants can only be used on a site once, necessitating creative solutions to secure the remaining resources. Meanwhile, the solar farm project remains a promising opportunity, aligning with Greene County's vision for a diversified and sustainable economy.

Conclusion

The transformation of the Gateway Forest Products site illustrates the power of innovation, collaboration, and public/private partnerships. Greene County's journey from an economy dominated by coal to one embracing clean energy and sustainability is a testament to its resilience. By continuing to prioritize brownfield redevelopment, Greene County can turn its industrial past into a foundation for a brighter, greener future.

***Gregory M. Firely, BCES is a** Vice President / Senior Project Manager with AMO ENVIRONMENTAL DECISIONS, Environmental Risk & Remediation Consultants*

ESWP Member News

We are pleased to recognize the more than 75 firms in the Corporate Member program of the Engineers' Society of Western Pennsylvania (ESWP). Corporate Memberships are available at 3 levels: Gold, Silver and Bronze. Gold members are entitled to 14 memberships that can be exchanged by employees; Silver, 9; and Bronze, 5 — annual dues are $2400, $1700, and $1000 respectively. In addition, ESWP Corporate Member Firms may add 2 additional individuals in our Under-35 age category at no additional cost!

We also offer Individual Memberships, including a new "Under-35" category, which allows for full member privileges at annual dues of $25 and a Government rate (full-time), for $50.00! More information can be found at eswp.com. Please contact the ESWP Office (412-261-0710, or eswp@eswp.com) with any questions.

Membership in ESWP comes with a long list of benefits! From our continuing education opportunities earning you Professional Development Hours (PDHs), to the business networking events in our Executive Dining Room, there is something for everyone in your organization. Also, ESWP is helping the next generation of engineers with student STEM outreach programs, giving you the opportunity to participate in many rewarding programs.

2025 Member Dues were invoiced in January, 2025. If you have yet to receive your invoice, please contact the ESWP offices. Thank you!

ESWP Gold Corporate Member Firms

AECOM
Allegheny County Airport Authority
ARCADIS
CDM Smith
DLC Duquesne Light Co.
CDR Maguire Engineering
gai consultants transforming ideas into reality
Gannett Fleming TRANSYSTEMS
Geosyntec consultants
GPI
HATCH
HDR
Michael Baker International

ESWP Silver Corporate Member Firms

CEC Civil & Environmental Consultants, Inc.
Gateway On Call. On Time. On Target.
KU Resources, Inc.
KTA
PJ Dick Trumbull Lindy Paving
PRT Pittsburgh Regional Transit
RVE 1901 Remington & Vernick Engineers
Wade Trim

ESWP Bronze Corporate Member Firms

A Steel City that Refuses to Rust Away: Pittsburgh's Brownfield Redevelopment Tale

By: Stephanie Gundling, Dominick Anselmo, & Mark Urbassik, KU Resources

Once known as a bustling steel town with large industrial mills lining the banks of its three rivers, for over a century Pittsburgh was the center of the steel, iron, and glass industry. But with the export of industry in the 1980s and 90s, came the import of vacant, contaminated, and burdensome commercial and industrial real estate. Brownfields, as they are now labeled, by definition of the United States Environmental Protection Agency (USEPA), are properties of which the expansion, redevelopment, or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. As best explained by the USEPA, cleaning up and reinvesting in these brownfield properties increases local tax bases, facilitates job growth, utilizes existing infrastructure, takes development pressures off greenspace, and both improves and protects the environment.

Pittsburgh has always been at the forefront of brownfield redevelopment. Not only was the first Brownfield Conference held here in 1996, but Pennsylvania's Land Recycling and Environmental Remediation Standards Act (commonly referred to as Act 2) was signed by Governor Tom Ridge at the Industrial Center of McKeesport in 1995. Act 2 was revolutionary for its time not just for Pennsylvania, but for many other states who used it as a model when drafting their own voluntary cleanup programs. Act 2 provided a clear, feasible path forward for property owners to receive liability protection. What was perhaps most intriguing about Act 2 was that it incorporated the option to use a site-specific practical approach to attaining cleanup standards allowing for alternative remediation methods like risk assessment, institutional controls, and engineering controls. Institutional controls generally take the form of environmental covenants with activity and use limitations on groundwater, construction, property use, and post remediation care requirements. Engineering controls could include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination. For example, where it was previously required to do costly excavation and disposal of all contaminated soil, now under the site-specific standard, in tandem with a risk assessment demonstrating that human health and the environmental are protected, a parking lot could be engineered as a cap over the soil or a subslab vapor barrier system could be required on any new buildings constructed. Similarly, where it was previously required to install long term "pump and treat" systems to remediate groundwater, a groundwater use restriction could be placed on the property deed via Environmental Covenant.

With brownfield real estate inventory on the rise, typically at a bargain rate, and a clear path to liability protection with the passing of Act 2, it seemed that all the pieces were falling into place for Pittsburgh's brownfield renaissance, however one major problem remained: the often unpredictable expenses associated with any demolition, remediation, and redevelopment of these properties. This funding gap was inevitably recognized and led to a wide array of state and federal grants and loans dedicated to brownfields over the past three decades. Many organizations in Pittsburgh have successfully tapped into these brownfield funding sources, however perhaps three of the most catalytic brownfield converters in town include the Urban Redevelopment Authority of Pittsburgh (URA), Regional Industrial Development Corporation (RIDC), and Northside Industrial Development Company, Inc. d/b/a Riverside Center for Innovation (NSIDC).

Mill 19 - 2013 and Current *Photos Courtesy RIDC.org*

Urban Redevelopment Authority of Pittsburgh

The URA is the City of Pittsburgh's economic development enterprise which, since its incorporation in 1946, has helped bridge public and private interests to invest in meaningful equitable developments that promote housing affordability, economic mobility, entrepreneurship and neighborhood revitalization. It's brownfield success stories span from river to river including projects like the Lower Hill (former Civic Arena), Washington's Landing, Pittsburgh Technology Center, Hazelwood Green, SouthSide Works, Summerset at Frick Park, and Bakery Square.

The SouthSide Works was formerly the Ling-Temco-Vought (LTV) Steel Co. Steel Mill until 1993 when the URA purchased the 123 acre site. Part of this project included converting the Hot Metal Bridge for automobile traffic and the addition of a pedestrian bridge. According to the URA, this site has attracted more than 800 residents and over 4,000 jobs.

Formerly used as a riverside slag dump, Summerset at Frick Park is a 238 acre neighborhood development located in the East End of Pittsburgh, a mere 6 miles from downtown. This redevelopment has significantly enhanced housing opportunities within the City of Pittsburgh and is the largest residential development since World War II. Upon completion of the third and final phase, the project will have resulted in 713 units of new housing (336 single family homes, 121 townhomes, and 256 apartment units) and 105 acres of improved park area.

Nestled into the Larimer neighborhood approximately 5 miles from Downtown there once sat a National Biscuit Company (Nabisco) Factory which filled the neighborhood with sweet smells of bread, biscuits, crackers, and various other treats. In 1998, the factory quietly closed its doors ending 80 years of production. After a few short stints by other bakeries and sitting vacant for two years, in 2007 the site started its repositioning into the thriving Bakery Square with high-tech office tenants such as Google and retailers like Anthropologie and West Elm.
Source: https://www.ura.org/pages/brownfield-projects

Regional Industrial Development Corporation

The RIDC was formed in 1955 as a private nonprofit with an economic development mission transforming the region's underutilized real estate assets to capture growth opportunities across diverse industry sectors. Some of its revitalization highlights include Keystone Commons, Industrial Center of McKeesport, City Center of Duquesne, Pittsburgh Technology Center (in partnership with the URA), Nabisco Bakery (in partnership with the URA), Westmoreland Innovation Center, Hazelwood Green/Mill 19, Carrie Furnace, and New Kensington Advanced Manufacturing Park.

Hazelwood Green, which sits along the bank of the Monongahela River in Hazelwood, was left abandoned when the Jones & Laughlin Steel Company, which was later acquired by LTV, closed the plant in 1997. The 178 acre site, which was the largest remaining developable piece of land remaining within the City of Pittsburgh, was purchased in 2002 by Almono LP (today comprised of three foundations) for $10 million. From 2002 to 2015, RIDC served as the sole member of Almono LLC. During this time, a significant amount of environmental remediation and site preparation occurred to ensure compliance and meet clean-up requirements through Act 2. In 2016, RIDC purchased the Mill 19 portion of Hazelwood Green from Almono LP. The former mill building has been transformed into a green, sustainable advanced manufacturing research center and the mill's steel superstructure supports the largest rooftop solar array in the U.S.

RIDC partnered with the Redevelopment Authority of Allegheny County to build upon existing investments at the Carrie Furnace Development. The development includes 55 acres adjacent to Carrie Blast Furnaces #6 and #7 located along the Monongahela River in Rankin Borough which had historically formed part of the Homestead Steel Works. In 2006 the blast furnaces were designated a National Historic Landmark. The property incudes a 60,000 square foot flex-tech building and pad-ready sites, which are recognized as key to attracting businesses by reducing construction complexities and minimizing risks for developers. *Source: https://ridc.org/about-us/; https://www.almono.org/thehistory*

Northside Industrial Development Company

NSIDC, which was established in 1983, serves as an economic engine for all who live and work in the region by providing brownfield development sparking urban revitalization, among its other important roles like being a small business incubator. While the URA and RIDC are known for taking on larger industrial sites, NSIDC tends to focus its efforts on smaller critical real estate in at-need neighborhoods.

In the Borough of Wilkinsburg, they funded environmental assessment and procurement of Act 2 relief of liability for Hosanna House and Action Housing's Penn Avenue Development. The development includes transformation of a site which was formerly the Penn Lincoln Hotel and an adjoining gas station into the Penn Lincoln Apartments, which will include 42 affordable supportive housing apartments located above 20,000 square feet of retail space.

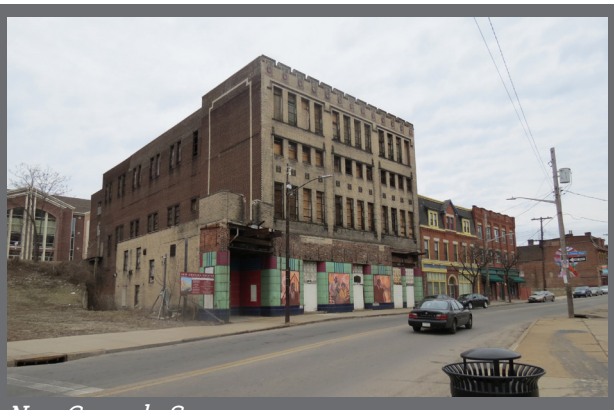
In the Perry Hilltop neighborhood of the City of Pittsburgh, they are working with the Perry Hilltop Citizens' Council and a local property owner to fund the environmental services necessary to convert an old American Legion Building and adjoining gas station into a daycare center, preschool, and after hours event space for the community. NSIDC's efforts will result in Act 2 relief of liability for the property owner.

In the Borough of McKees Rocks, they are supporting environmental services required at a former Pittsburgh & Lake Erie Railyard which will play a critical role in development of the Chartiers Creek "Place to Grow" area as designated in the borough's comprehensive plan. Redevelopment of this property could improve connectivity to provide a major access point to redevelopment of the remaining P&LE Railyard.

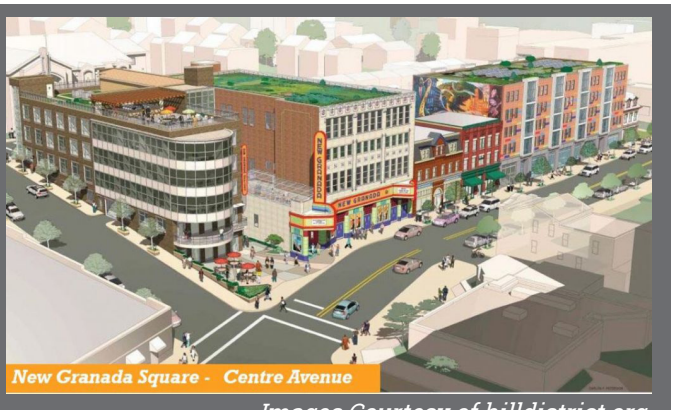
In the Hill District neighborhood of the City of Pittsburgh, NSIDC has won awards for its work at New Granada Square. When construction is complete, the development will include a restored Pittsburgh Historic Landmark, the New Granada Theater, as well as 40 units of affordable housing and first floor commercial space including restaurants and offices.

Full Steam Ahead

While evidence of brownfield redevelopment is widespread across Pittsburgh today, there are no indications of it slowing down. With 2025, and off the heels of the Bipartisan Infrastructure Law, comes the availability of more funding than has ever been allocated before for brownfield planning, assessment, and cleanup. This year the USEPA announced $300 million in new funding to cleanup and redevelop 200 industrial sites across the country, which has quadrupled under Bipartisan Infrastructure Law. At the state level, the Pennsylvania Strategic Investments to Enhance Sites (PA SITES) program was allocated $400 million in the bipartisan 2024-2025 budget. As Pittsburgh continues to invest in its brownfields, it sets a precedent for other cities, showcasing how strategic redevelopment can breathe new life into neglected areas while fostering a sense of community and pride. Ultimately, the journey of these sites reflects the resilience and ingenuity of the city, paving the way for a greener future.



New Granada Square



Images Courtesy of hilldistrict.org

What to do if you have PFAS at your Brownfield Site?

By: Colleen Costello, PG, Russ Abell, PG, LSP, and Steve Zemba, PhD, PE,
Sanborn Head and Associates, Inc.

Does the presence of PFAS (or perfluoroalkyl and polyfluoroalkyl substances) at a Brownfield site mean the site cannot be successfully investigated and redeveloped under the Pennsylvania Act 2 Program? Thankfully, the answer is no, but due to the rapidly evolving world of PFAS there are many items to consider at the beginning of the project. These considerations include:

- Does the site history indicate that PFAS is likely to be present?
- What PFAS compounds (if any) should be sampled?
- Are there potential background or offsite PFAS contributors?
- Which PFAS compounds (if any) should be included in the release of liability?
- Will disposal of soils or obtaining a permit trigger additional PFAS sampling and costs?

Another consideration for potential PFAS impacts at the start of a Brownfield project is how likely can remediation be completed since current PFAS technologies are generally focused on point source treatment of water. PFAS soil remediation technologies are not widely deployed, and while there are some exciting developments in this area, integration of a pathway elimination approach may be important to the planned redevelopment from the start.

PFAS Overview

PFAS have been manufactured on a commercial scale since the 1950s.[1] Longer chain PFAS were replaced by shorter chain and partially degradable "precursor" PFAS in the U.S. due to potential concerns of health and environmental impacts .U.S. manufacturers specifically phased out PFOA and PFOS production between 2000 and 2015, but these compounds are still produced world-wide and can still be found in many products. The stable C-F bond found in PFAS also make them difficult to degrade and mobile in the environment. PFAS are found at elevated levels in wastewater treatment plants and landfills that receive PFAS-containing effluents and wastes, and hence are commonly detected in surface water.[2] Releases to the environment have also led to detectable "background" levels of PFAS in surface soils

Figure 1- Typical Brownfield Site

PFAS are a class of almost 15,000 compounds which have been identified as PFAS in the EPA's CompTox Chemicals Dashboard Limited PFAS compounds, however, have an EPA approved analytical method to be used in site characterization. The current approved EPA analytical methods for PFAS in soil and groundwater are shown in Table 1. The list of PFAS with targeted analyses is expanding and additional target analytes may influence how many PFAS compounds are analyzed for at Brownfield sites.

PFAS can exist as acids, anions, cations, and zwitterions and the ionic state of the PFAS can influence its fate and transport, along with conditions in the subsurface such as interfacial air/water tension.[4] During fate and transport, some PFAS can undergo

Lab Method	Status	Media
Method 553	Final	25 PFAS in drinking water
Method 537.1	Final	18 PFAS in drinking water (UCMR 5 requirements
Method 8327	Final	24 PFAS in non-drinking water
Method 1633	Final	40 PFAS (wastewater, SW, GW, soil, biosolids sediment, leachates, fish tissue)

Table 1: Current EPA Analytical Methods for Soil and Groundwater

environmental transformation, such that the precursor in the original product will transform into intermediate products and then finally to terminal end products such as PFOS and PFOA.[3] Due to these environmental transformations, there is the potential for concentrations of PFOS and PFOA to increase due to the transformation of the precursor and intermediate products. Due to the technical complexities of PFAS, designing a site investigation for PFAS can be quite challenging, but it can be successfully accomplished, as is discussed further below.

The technical challenges related to PFAS are further complicated by the rapidly evolving regulatory landscape for PFAS, summarized below:

- The PADEP developed soil and groundwater Medium-Specific Concentrations (MSCs) for PFOA and PFOS based on EPA's 2016 Drinking Water Health Advisories (HAs) for PFOA and PFOS.
- In January 2023, Pennsylvania issued its first state maximum contaminant levels (MCLs) for PFOA and PFOS, which then became the Groundwater MSCs. The soil MSCs remained unchanged since they are calculated and need to go through the regulatory approval process.
- In June 2024, the EPA established federal MCLs for several PFAS compounds. Which then became the groundwater MSCs but the soil PFAS MSCs remained unchanged and still based on the older HA. The expectation is that when the new soil MSCs for PFAS are promulgated, they will be significantly lower than the current soil MSCs.
- Since the soil MSCs are used for Clean Fill in PA, lower soil MSCs could be an especially important consideration if soil MSCs are lowered to below "background" levels, such as have been evaluated in other states.
- The EPA's draft PFAS disposal guidance document issued in 2024 recommends deep well injection, incineration, and disposal in hazardous waste landfills. If soils at a Brownfield site need to be sent offsite for disposal, and PFAS is present in the soils that may significantly impact disposal costs and options.[5]

PFAS Investigations at Brownfield Sites

Due to the widespread detections of PFAS[7] and potential aerial deposition of PFAS especially in industrialized areas, as assessment of potential background or offsite sources of PFAS should be considered for a Site. A review of former site operations to identify key areas such as fire training areas or metal plating can assist in identification of potential PFAS sources which will inform the sampling grid and depths. A discussion of which PFAS compounds should be analyzed is a critical consideration at the start of a Brownfields site assessment based on both the technical and regulatory challenges for PFAS. Depending on site assessment objectives and potential on-site and off-site PFAS sources, the list of PFAS analyzed is of strategic importance. For example, in some instances only those with Act 2 MSCs might be of interest, whereas the 40 PFAS that can be detected by Method 1633 may be important to support a forensic evaluation or establish a site specific standard under Act 2 for a broader release of liability. Several states such as New Hampshire, Maine and Vermont have assessed and/or established background levels for PFAS in soil[8] , but since the Act 2 Program already includes a background standard option for individual sites, an effort to establish statewide background levels is not currently being pursued for Pennsylvania.

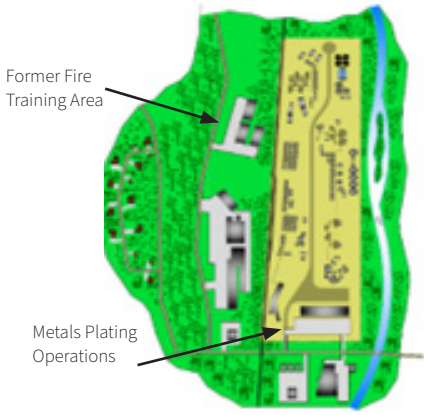


Figure 2: Hypothetical Brownfield

There are several PFAS sampling best practices that can be followed to avoid cross-contamination of PFAS during sampling.[9] Cross contamination occurs due to a combination of extremely low regulatory limits for PFAS, that PFAS can be found in sampling equipment, sampler's clothing and personal care products (e.g. sunscreen and insect repellent) and materials used for decontamination may contain PFAS.

PFAS Remediation at Brownfield Sites

Most efforts at PFAS treatment to date have focused on drinking water using proven technologies such as adsorption onto granular activated carbon, reverse osmosis, and ion-exchange (IX) resins. These technologies have also been used at a limited number of sites for ex situ groundwater treatment using groundwater pump and treat systems. These methods produces a PFAS-concentrated waste stream that must be managed according to EPA's currently recommended disposal options.[10] Additional destructive technologies for treating high concentration are also being researched/pilot tested, including plasma and supercritical water oxidation. (SCWO). Foam fractionation is another method for treating higher concentration aqueous PFAS streams to minimize residual waste. Efforts at in situ treatment of groundwater are focusing on injection of granular activated carbon to sorb/arrest plume migration, and researchers are looking at different amendments such as XAD resins and more advanced absorbents that can improve shorter chain PFAS treatment. Soil treatment methods are beginning to emerge, but they are mostly still at the research/demonstration stage, and include thermal desorption and smoldering followed treatment of the airborne PFAS effluent in a destructive incineration technology such as a thermal oxidizer. Hydrothermal alkaline treatment (HALT) is another method that offers promise for treating soils and takes advantage of the ability of alkaline amendments to lower the activation energy for treating PFAS.

Figure 3: Soil sampling for PFAS

Due to the current state of PFAS remediation, especially for Brownfield sites, the approach being selected by most remediators is to identify PFAS source areas and mitigate PFAS movement from these areas. Since PFAS is commonly found around the groundwater interface in unsaturated soils, the use of caps (i.e. buildings and roads) to eliminate the soil to groundwater pathway should be considered in the initial planning phases of the project. Remediators are also trying to minimize offsite soil movement and to reuse onsite soils following Soil Management Plans. Point source treatment for groundwater being used as drinking water or discharged to surface water are being incorporated into onsite waste water treatment designs, where possible, along with other pathway mitigation measures such as lining of stormwater ponds. The use of monitored natural attenuation for low levels of PFAS in groundwater, combined with mitigation of the soil to groundwater pathway and point source treatment when necessary, can be accommodated within the PADEP's Act 2 program allowing Brownfield sites with PFAS impacts to successfully move forward despite all the complexities surrounding PFAS.

References:

1. ITRC, History and Use of Per- and Polyfluoroalkyl Substances found in the Environment, September 2023.
2. 2. At least one PFAS was detected in 76% of the sampling locations in a USGS-led surface water survey in PA
3. (https://www.epa.gov/comptox-tools/comptox-chemicals-dashboard).
4. ITRC, Fate and Transport of Per- and Polyfluorinated Substances (PFAS), September, 2023.
5. Wenyu Zhu, A. R. Badireddy, H. Roakes, and S. Zemba. "PFAS Background in Vermont Shallow Soils", study report completed by Sanborn Head and the University of Vermont in partnership with the Vermont Department of Environmental Conservation. March 24, 2019.

5. Sanborn Head and Maine Department of Environmental Services. "Background Levels of PFAS and PAHs In Maine Shallow Soils". July 19, 2022.

5. New Hampshire Department of Environmental Services. "Proposed Soil Remediation Standards (SRS) for Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonic Acid (PFOS), Perfluorohexane Sulfonic Acid (PFHxS), and Perfluorononanoic Acid (PFNA)". October 6, 2023.

6. EPA, Interim Guidance on the Destruction and Disposal of PFAS and Materials Containing PFAS, 2024

7. At least one PFAS was detected in 76% of the sampling locations in a USGS-led surface water survey in PA

8. Wenyu Zhu, A. R. Badireddy, H. Roakes, and S. Zemba. "PFAS Background in Vermont Shallow Soils", study report completed by Sanborn Head and the University of Vermont in partnership with the Vermont Department of Environmental Conservation. March 24, 2019.

8. Sanborn Head and Maine Department of Environmental Services. "Background Levels of PFAS and PAHs In Maine Shallow Soils". July 19, 2022.

8. New Hampshire Department of Environmental Services. "Proposed Soil Remediation Standards (SRS) for Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonic Acid (PFOS), Perfluorohexane Sulfonic Acid (PFHxS), and Perfluorononanoic Acid (PFNA)". October 6, 2023.

9. ITRC, Sampling Precautions and Analytical Methods, September 2023.

10. EPA, Interim Guidance on the Destruction and Disposal of PFAS and Materials Containing PFAS, 2024

The International Water Conference®

Hilton in the Walt Disney World Resort®

Orlando, FL, USA

November 9-13, 2025

https://eswp.com/water