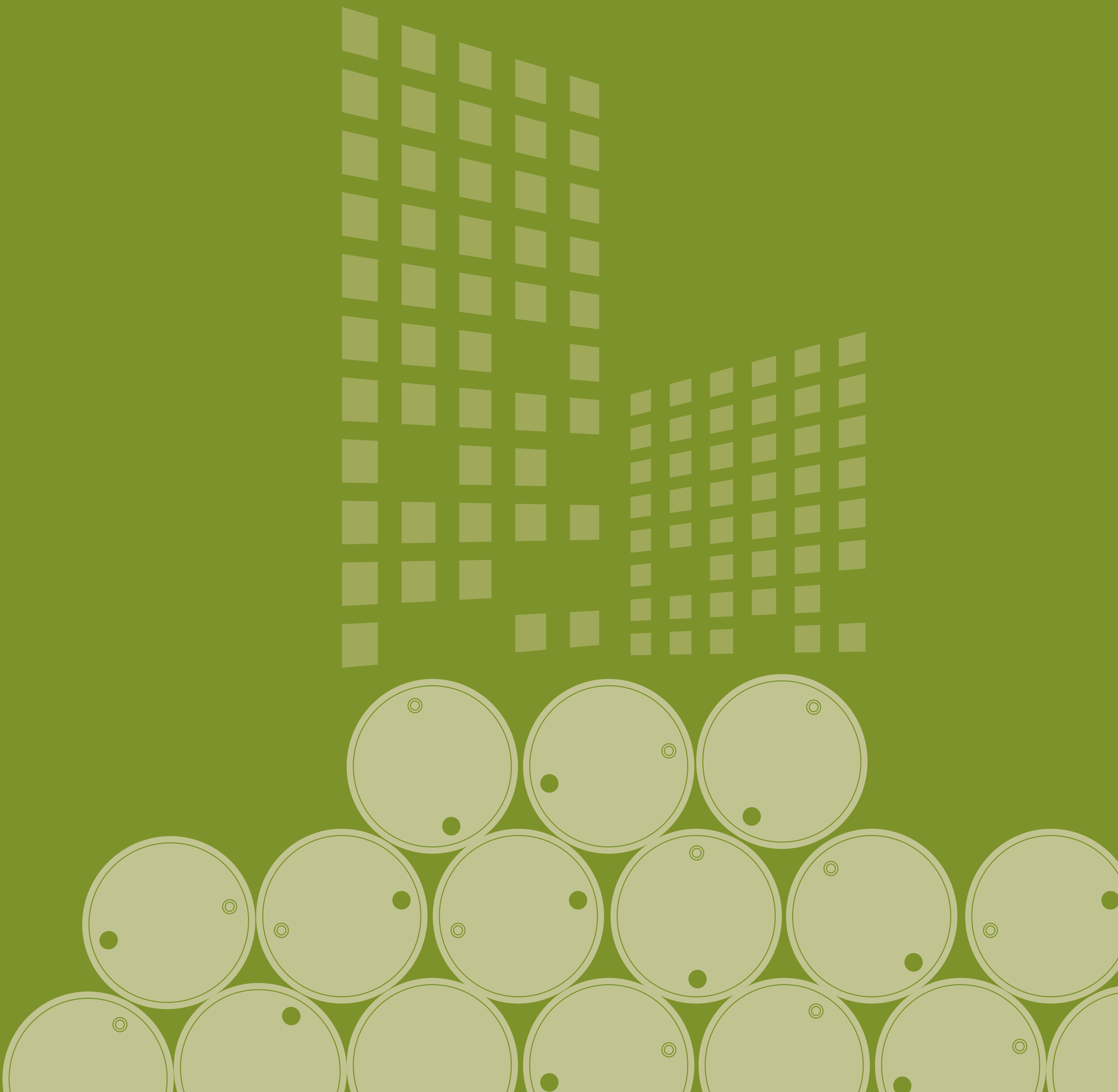
Insurance // Environmental

Urban Fill:

Navigating the transactional and redevelopment uncertainty of clean vs. contaminated fill



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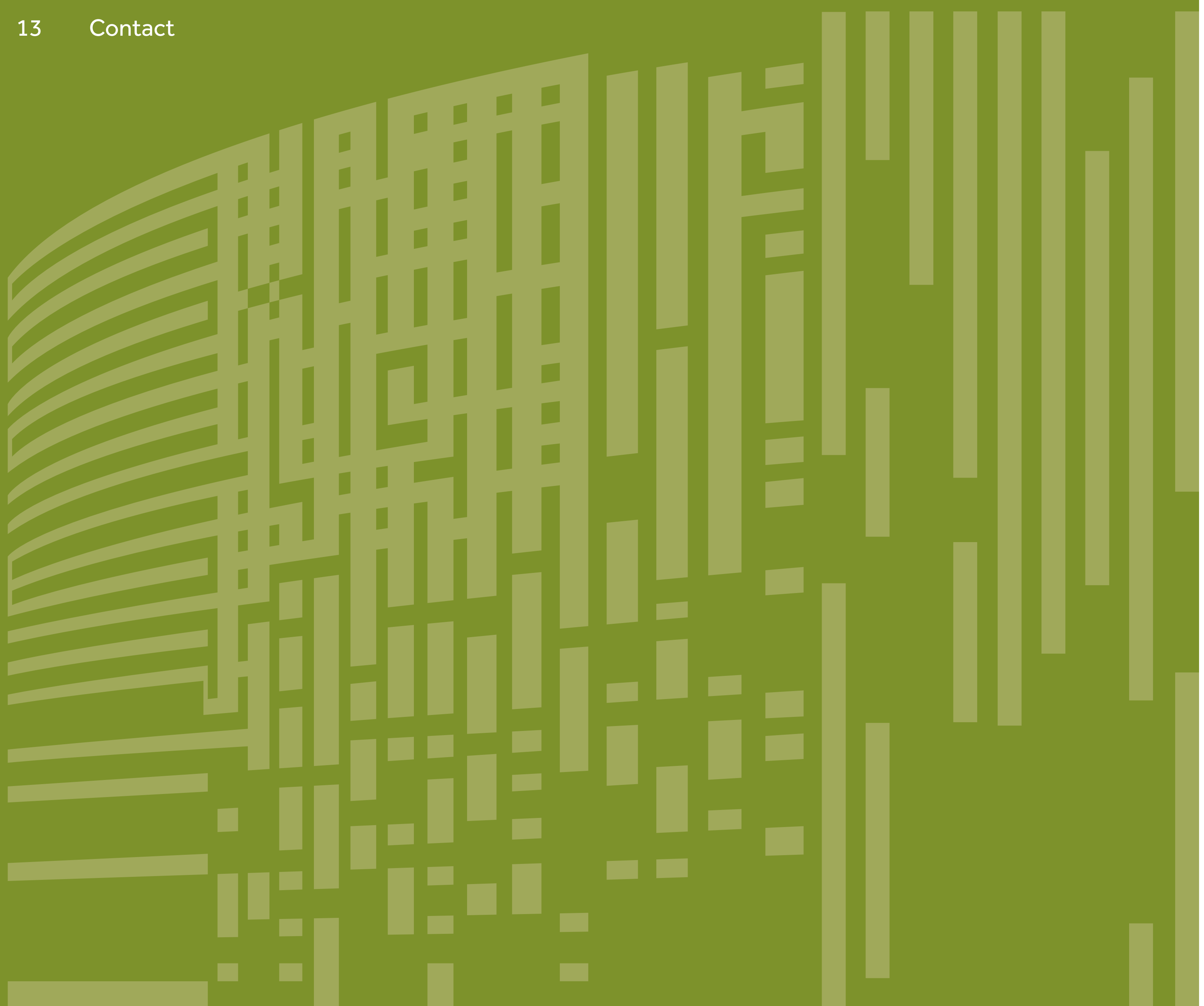


Introduction/Overview

One of the most common challenges that continues to plague developers and property owners is urban fill. Often found in older areas with a history of commercial or industrial use, it is also commonly found at waterfront properties, where lower elevation areas were raised above potential flood levels and/or to facilitate construction.

The geotechnical and chemical characteristics of urban fill are unpredictable.

This uncertainty, sometimes even at well characterized sites, has resulted in costly pollution liability claims that have included unplanned remediation, third party bodily injury and property damage claims, construction delays, business interruption and legal liability expense.

It is widely known that beginning in the early 1900s and through the 1960s, older urban areas in eastern states such as Massachusetts, New York, and New Jersey used various types of fill/debris consisting of demolition materials, dredging spoils, and other waste or unusable industrial by-products (slag, ash etc.) to fill and re-grade properties. Likewise over the years, this practice has been used to create new high value, waterfront property in expensive metropolitan real estate markets such as Seattle, San Francisco, and San Diego. Furthermore, the frequent practice of contractors using construction and demolition debris, soils and other material, sometimes from unknown sources, for site development/grading has increased the likelihood of encountering urban fill. This is no longer restricted to the largest and oldest metropolitan areas of the U.S. but in a majority of developed urban areas.

The increased re-use of urban industrial areas for residential use has also created a challenging environment for developers to navigate where urban fill and other pre-existing pollution conditions must be effectively managed. When a site is known or suspected to be underlain by urban fill, property buyers and developers must expect it to be encountered and understand the complex options for how to treat, leave in-place, or remediate these materials to minimize any potential threat to human health. The primary issues in redevelopment of property underlain by fill materials are the prevention of direct human contact and geotechnical suitability for structures. However, before undertaking a detailed review of the challenges associated with redevelopment of such sites, it is important to understand the definition of *urban fill* and/or *historic fill*.

// As the real estate market heats up, the push by developers to complete infill projects within metropolitan areas continues to raise concerns over the chemicals and hazardous materials in urban fill. //

What is urban fill?

There are numerous Federal, State, and local definitions for urban or historic fill depending on the property location and regulatory program governing the site.

The USDA's Natural Resource Conservation Service (NRCS), which is responsible for classifying and mapping US soils, states that soils in urban areas can be divided into two general types: "natural soils," which formed in material naturally deposited or weathered from the underlying bedrock, and "anthropogenic soils," (i.e., man-made), which formed in human-deposited material or fill. The NRCS cites the following examples of fill material in urban soils:

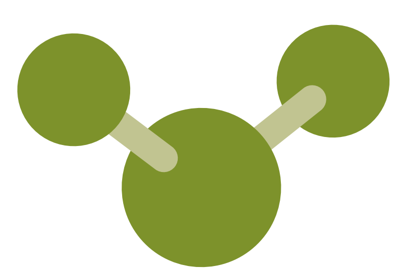
- Natural soil materials that have been moved around by humans
- Construction debris
- Materials dredged from waterways
- Coal ash
- Municipal solid waste
- A combination of any or all of the above

The NRCS does not comment on specific contaminants in urban soil; however, it is important to recognize that "debris" may also include materials from demolition of fire damaged structures. Similar to coal ash and other kinds of ash, these types of materials typically include polycyclic aromatic hydrocarbons (PAHs), which are semi-volatile organic compounds that are the product of incomplete combustion. Although specific contaminants are subsequently discussed in more detail in this paper, this is noteworthy since all of the following definitions reference ash and/or PAHs (also sometimes referred to as polynuclear aromatic hydrocarbons).

The New Jersey Department of Environmental Protection (NJDEP) defines *historic fill material* as non-indigenous material, deposited to raise the topographic elevation of the site, which was contaminated prior to emplacement, and is in no way connected with the operations at the location of emplacement and includes, without limitation, construction debris, dredge spoils, incinerator residue, demolition debris, fly ash, or non-hazardous solid waste. According to NJDEP, any chromate waste, chemical production waste, waste from processing of metal or mineral ores, residues, slag or tailings is defined as historic fill.

The Massachusetts Department of Environmental Protection (MADEP) Massachusetts Contingency Plan (MCP) defines historic fill as being emplaced before January 1, 1983; primarily composed of construction and demolition debris, reworked soils, dredge spoils, coal ash, wood ash or other solid waste material; is contaminated with metals, hydrocarbons, and/or PAHs prior to emplacement; does not contain oil or hazardous materials originating from operations or activities at the location of emplacement; is not and does not contain a generated hazardous waste; does not contain chemical production of manufacturing waste; and does not contain waste material disposed of in a municipal solid waste dump.

The City of New York refers to historic fill as a heterogeneous mixture of various waste products including construction and demolition debris, roadway construction debris, rubble, backfill soil, boiler ash, industrial debris, and/or coal and municipal incinerator ash. Typically, historical fill contains metals and PAHs. The New York Department of Environmental Conservation (NYDEC) goes further by defining historic fill material as non-indigenous or non-native material, historically deposited or disposed in the general area of or on a site to create useable land by filling water bodies, wetlands or topographic depressions, which is in no way connected with the subsequent operations at the location of the emplacement.

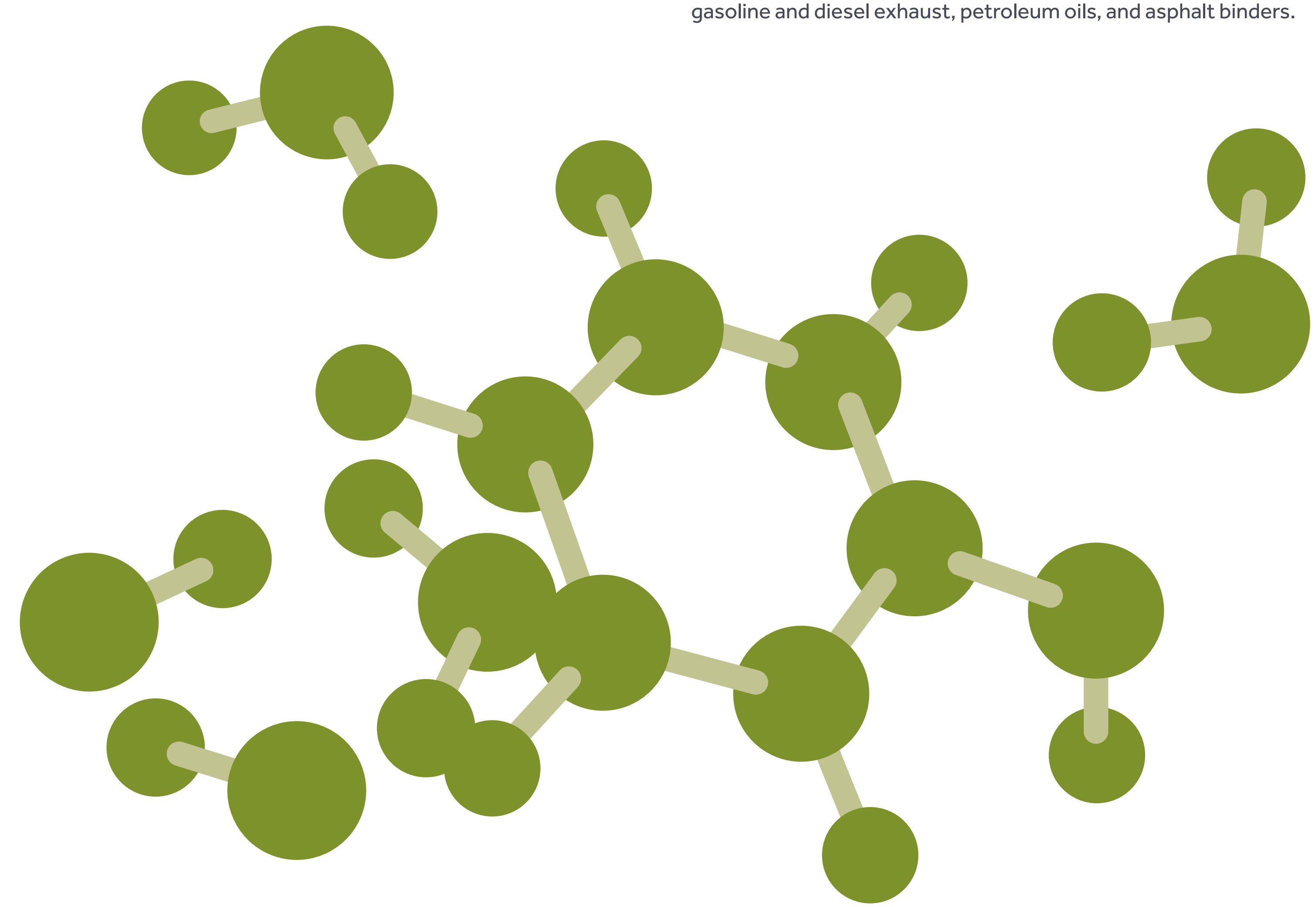


Contaminants found in urban/historic fill

Previous investigations of urban fill sites in the northeastern United States indicate there are two contaminant classes commonly found: PAHs and metals, particularly lead and arsenic. Other contaminants found, but with less frequency include: PCBs, dioxins, and asbestos. Total petroleum hydrocarbons (TPH) are also frequently present and have been important because they are often regarded as a key risk-based corrective action or regulated disposal parameter.

Polycyclic Aromatic Hydrocarbons (PAHs)

A 2010 joint study by the USEPA and the City of New York on historic fill revealed that fill materials within the New York Metropolitan Area commonly contain PAHs and metals. These contaminants are typically spread throughout fill materials at low to moderate concentrations. As noted PAHs are semi-volatile organic compounds often associated with the combustion of petroleum-based fuels and wood; however, they are also commonly present in the environment as oil, diesel fuels, aircraft fuels, coal, tar, and asphalt. PAHs are often present in urban fill from buried road construction materials, building construction materials, and coal or other ash. In the New York Metropolitan Area, the most commonly detected PAHs included: benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k) fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd) pyrene. According to a 2010 study by environmental consultant CDM, benzo(a)pyrene was found to be the most frequently detected PAH in urban fill. PAH compounds are particularly prominent in urban soils due to anthropogenic sources, such as gasoline and diesel exhaust, petroleum oils, and asphalt binders.



// It is important to understand local and regional industrial operations that generated urban fill areas and may have contributed contaminants. //

Arsenic, lead, and other metals

The aforementioned CDM study also found that arsenic and lead were the most problematic metals in old urban areas and railroad beds due to historical pesticide use. Lead has become a particular concern due to failures of the toxicity characteristic leaching procedure (TCLP) to determine if contaminated heterogeneous fill should be classified as a RCRA hazardous waste. Similarly in California, there has been an increase in failure of the Waste Extraction Test (WET) in determining whether lead-contaminated soil/urban fill must be disposed as a non-hazardous waste or a California hazardous waste. Note: TCLP and WET are two of several test methods used in California for determining the hazardous waste toxicity characteristic of a given regulated chemical/waste. The CDM study concluded that it is rare to find an urban fill site dominated by other metals without the likely presence of arsenic and lead.

Arsenic is naturally occurring in soil but the primary source of widespread contamination is typically from pesticide use. Lead-arsenate pesticide was commonly used from the 1940s to the early 1970s on orchards as well as along railroads. Decaying treated timber is another arsenic source. In various urban park projects in Boston, where more than 300 samples were collected and analyzed to characterize the sites, arsenic was detected in 90% of the fill soil samples.

There have been similar experiences in California, where commercial areas are being redeveloped and soil sampling has revealed arsenic and other pesticides from former orchard/agricultural uses. The California Environmental Protection Agency (CalEPA) Department of Toxic Substances Control (DTSC), requires a Phase I Environmental Site Assessment (ESA) as part of the approval process prior to allocating public funding for acquiring, constructing, or renovating a new or existing school property. If the Phase I ESA identifies the potential for site contamination, a "Preliminary Environmental Assessment" is then completed and may include sampling for petroleum hydrocarbons, metals, PCBs and pesticides. Some school sites in urban areas like Los Angeles County were previously historic orchard and farming areas where lead- and arsenic-based pesticides have been detected.

High concentrations of background contaminants at such sites may further complicate redevelopment at locations that also include urban fill. Due to the relative immobility and low solubility of arsenic and lead, natural background and urban fill background concentrations are typically higher than actual risk-based concentrations (RBCs). This is evidenced in Massachusetts where the residential RBC for arsenic is 18 mg/kg and background concentrations are slightly higher at 20 mg/kg. Despite some areas of Massachusetts having natural background arsenic concentrations exceeding 40 mg/kg, this is the level that constitutes an "Imminent Hazard" condition when present in surface soils accessible to young children. In California, the CalEPA Office of Environmental Health Hazard Assessment (OEHHA) and the DTSC set the residential cleanup level for arsenic at 0.07 mg/kg. However, the typical background concentration in southern California is 10 to 12 mg/kg. The USEPA Region 9 Regional Screening Levels (RSLs), which are based on a 1x10-6 excess lifetime cancer risk exposure, establishes a cleanup goal of 0.67 mg/kg for arsenic in residential uses.

Lead has a very high frequency of detection in urban fill soils. In the aforementioned Boston study, lead was even more common than arsenic as it was detected in 98% of samples collected in urban park sites. Lead is ubiquitous in urban fill soils due to its natural occurrence and anthropogenic sources including historical use of leaded gasoline, lead paint in building construction materials, and its presence in water supply piping. Lead is primarily present in urban area soils due to the proximity to highly travelled roads and presence of older buildings with lead-based paint.

Recent studies show that concentrations of lead in urban soils range from 100 mg/kg to 1,000 mg/kg. The MADEP residential soil standard is 300 mg/kg, while the Connecticut Department of Environmental Protection (CDEP) residential soil standard is 500 mg/kg. The current USEPA Region 9 RSL for lead is 400 mg/kg for residential and 800 mg/kg for industrial use. However, the California OEHHA and DTSC published soil screening level for lead is 80 mg/kg for residential and 320 mg/kg for industrial uses. For any planned redevelopment, especially residential, soils must be analyzed using TCLP or in California using WET, to assess if soils will be required to be disposed off-site as a hazardous waste. Although capping impacted soils is an alternative with regulatory approval, this strategy is more applicable for future commercial and industrial end uses than residential redevelopment. Also, in general any engineering or institutional controls that are implemented to address in-place contamination must be documented via a deed restriction.

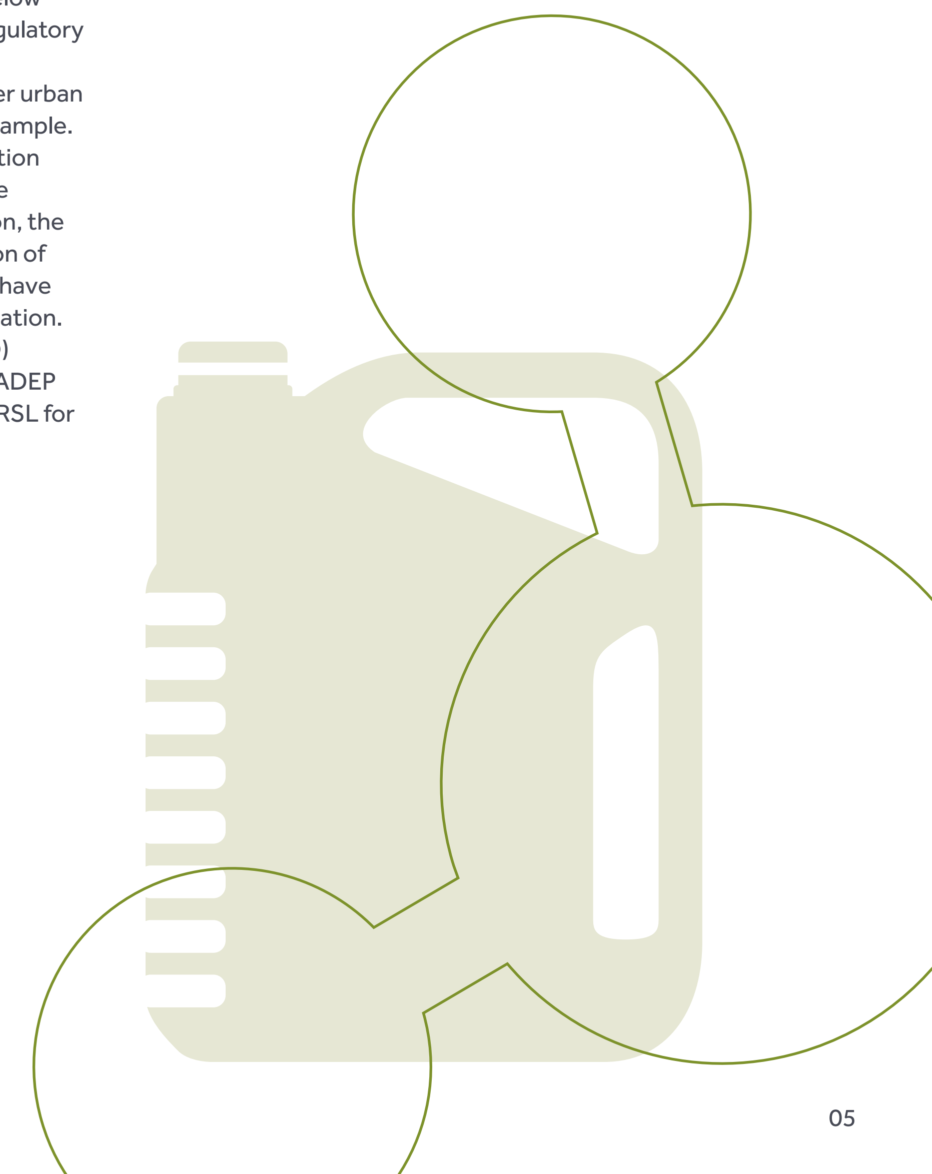
Other metals that may be detected in urban fill include beryllium, cadmium, copper, mercury and zinc, but at a much lower frequency. Beryllium is commonly found in fill materials as a byproduct of disposed coal and other ash and petroleum compounds. Cadmium is typically found in fill as a minor component of zinc ores and pigments in paint or corrosion resistant plating in steel. Copper is found in fill as a function of electrical products containing copper-based materials. Other metals may have a unique association with urban fill in certain regional areas due to localized industrial operations, like hexavalent chromium in the ore and slag processing areas of Jersey City, New Jersey. It is important to understand local and regional industrial operations that generated urban fill areas and may have contributed contaminants.

Dioxin and PCBs

PCBs are often present in urban fill, but usually at levels below normal cleanup goals or detection limits. However, the regulatory position, persistence, and disposal cost impacts can be significant. Dioxin is less commonly analyzed for than other urban fill contaminants partly due to its high analytical cost per sample. The largest source of dioxin is from historical industrialization that occurred from the 1920s through the 1970s. Airborne releases from commercial and municipal waste incineration, the manufacture and use of herbicides, and the land application of wastewater treatment sludge from pulp and paper plants have resulted in major environmental releases and fill contamination. The USEPA established a value of 20 ng/kg (2,3,7,8-TCDD) equivalent background, which was recently adopted by MADEP as the basis of the residential S-1 Standard. The Region 9 RSL for dioxin is 4,900 ng/kg.

Asbestos containing material

Asbestos is a mineral fiber and comes in various sizes and forms. Generally, if building material contains asbestos at less than 1% by volume, it is not considered asbestos containing. However, it is not uncommon for demolition debris to include some asbestos containing materials. There are also large numbers of natural deposits of these mineral fibers, particularly in California and in some areas of New England. In northern California, particularly, the San Francisco Bay Area, serpentine rock present in the subsurface contains the mineral chrysotile. In these areas, sampling is required to determine if naturally-occurring asbestos (NOA) materials are greater than 1% chrysotile. Construction of new schools and facilities are required by DTSC to sample for NOA. Typically, if NOA is found in soils, the impacted surface soils are removed and then capped by soil and/or impermeable materials. NOA in urban soils and fill is required to be properly disposed at a licensed and permitted facility.



Assessment and remediation of urban fill

Site investigation and cleanup approaches vary depending on the municipality, city or State where the urban fill is identified. Assessment methods can also vary depending on the end goal. Identifying the potential for historic fill to be present at a site can be as simple as reviewing soil surveys and databases. Delineating the actual presence of urban fill typically requires soil borings that result in soil boring log profiles and/or subsurface cross-sections of the site. Soil borings are routinely completed during pre-construction geotechnical studies. Further characterization of the areal extent, depth, material types and chemical profile of urban fill is usually required during environmental site investigations performed to support remediation strategies.

Some regulatory agencies require a minimum level of soil borings to either identify the existence of urban fill at a site or to further characterize the types of urban fill present. For example four soil borings per acre may be adequate for delineating the real extent and depth of urban fill. However, additional site investigation work is often necessary for developing remediation plans, site development plans, or waste characterization profiles for off-site soil disposal. The amount of sampling deemed adequate at an urban fill site can be highly variable, dependent on the client's risk tolerance, and dependent on the proposed remediation or redevelopment project goals. These differences result in uncertainty and risk that cannot be completely eliminated or transferred.

The NJDEP has developed a database map of all historical fill locations in the State. These maps were compiled through analysis of aerial photography and historic maps, neither of which provides conclusive evidence on the extent of historic fill. In the course of completing a Phase I ESA, it is recommended that prospective purchasers determine if site specific information is available concerning historic filling activities at a property. Per the NJDEP Technical Requirements, if historical fill is suspected at a site, delineation and characterization of the fill is required. The presence of historic fill can be confirmed by installing test pits or borings, documenting the vertical profile of fill materials in borings, field screening with a PID, and documenting depth to groundwater if encountered. Once the presence of fill is confirmed, a Licensed Site Remediation Professional (LSRP) must choose whether to assume historic fill material is contaminated above residential soil remedial levels and proceed with a remedial investigation or collect samples to document historic fill is not above residential cleanup standards. All samples must be analyzed for PAHs and metals. If results confirm contamination, then soil can be excavated and disposed off-site. If soil will be left in place, engineering and institutional controls are required as part of the remedial action. If an asphalt or clean soil cap is implemented, provisions must be made for inspection and maintenance.

The MADEP recently revised the regulations regarding management of historic fill. If sampling suggests that fill is defined as anthropogenic background fill, then remediation will not likely be necessary and is exempt from reporting to the MADEP. Thus, historic fill sites currently managed as a disposal site under the MCP would be exempt under current regulations.

The NYDEC encourages developers of historic fill sites to establish background fill areas to delineate localized areas of known contamination. The local pockets of contamination are typically removed, while the heterogeneous fill materials remaining can be capped in place and isolated by engineering controls, which reduces the threat to human health.

Regulatory agencies now recognize that the presence of historic fill material must be incorporated into environmental site assessments for construction and redevelopment projects. Regulators are more apt to approve the capping approach of fill materials containing low levels of metals and PAHs at proposed commercial/industrial redevelopment projects, but are often not able to approve this approach for residential projects. In general, the PAHs and metals found in historic fill are typically found at low concentrations, but usually exceed the more stringent risk-based residential cleanup standards. In these cases, developers are more likely to minimize excavation, maximize soil re-use on site, and incorporate impervious cap designs into site uses. This minimizes the potential need for off-site soil disposal, which can drive up overall project costs. This is particularly the case when site-specific risk based standards or soil impact-to-groundwater standard can be negotiated vs. standardized direct contact standards. The options available are often dependent on the site location and regulatory agency jurisdiction. In Massachusetts, even if the historic fill is considered a "background" condition that does not require remediation, if individual contaminants such as PAHs or metals exceed the MADEP individual contaminant cleanup standards, then off-site disposal of soils could still be required if extensive excavation is necessary to support redevelopment.

In California there are no established or defined criteria for historic or urban fill. More recent infill projects within the counties of Los Angeles, San Diego, and San Francisco have identified fill materials— specifically, PAHs and metals— that exceed Region 9 RSLs and/or DTSC soil screening values. In addition, there is an increased popularity with mixed use commercial and residential projects in urban areas to incorporate below grade parking structures due to limited site space and sky rocketing property values. As a result, deeper excavations are required and relocating impacted soils on site and capping is no longer an option because of the soil volumes involved.

Also a larger problem may be encountered when characterizing excavated soils for proper off-site disposal. Even if soils do not test as RCRA hazardous based on the TCLP analysis, they could still be classified as a State hazardous waste. As previously noted, since California also requires a WET analysis for any inorganics such as metals found above 10 times their solubility threshold values, this has the potential to result in urban soils being classified as a State hazardous waste. For example, soil lead concentrations exceeding 50 mg/kg requires a WET analysis to determine waste classification. If the WET analysis shows that lead exceeds the Soluble Threshold Limit Concentration (STLC) of 5 mg/l, then the waste is classified as a California hazardous waste. Thus if site characterization data does not include WET analyses, this creates uncertainty and site characterization for redevelopment purposes should be considered incomplete. This poses a problem for those developers that have not considered the potential for increased soil disposal costs.

In some cases, local ordinances require property owners, developers, and prospective purchasers to proactively manage known impacted areas and those with the potential to contain historic bay or riverfront fill. In San Francisco, the Maher Ordinance (Article 22A of the San Francisco Health Code) was established in 1986 due to concerns about hazardous substances potentially present in historic fill materials that could be encountered during development. The original ordinance applied to a geographically limited area of San Francisco, primarily along the historic shoreline and most common areas of historic fill. Those areas affected by the Maher Ordinance are designated on a San Francisco Planning Department map. If a site falls within the boundaries of the Maher Ordinance Map, the owner, developer, and/or seller is required to obtain a site history report (Phase I ESA), develop a subsurface investigation workplan, a final report, Site Mitigation Plan, and Final Certified Project report. On August 2013, the Ordinance was revised and expanded to include any projects that: disturb more than 50 cy of soil; is currently or historically zoned for industrial use; has current or former presence of USTs; is located within 100 feet of USTs or; are located within 150 feet of elevated highways.

Regulatory agencies continue to revise laws and improve assessment procedures for delineating background fill materials versus widely accepted protocols designed to identify contaminated natural soils resulting from historic site operations. In all cases, a thorough site assessment and characterization is necessary to determine whether urban fill was placed on site and/or from contamination associated with historic uses. Depending on the findings, a known release at the site typically assists with obtaining any credits or funding under Brownfields cleanup programs. However, although there may be urban fill present at a site, if there is no known contaminant point source it can be more difficult to obtain State or local funds for cleanup assistance. Because of the heterogeneous and unpredictable nature of urban fill, even sites with extensive sampling may be higher risk than those with less sampling, but well documented historic site operations, chemical use, and release histories. Site investigations at known or suspected urban fill properties often require a higher standard of care.

Urban fill/historic fill claims

The uncertainty associated with urban fill sites has resulted in numerous remediation expense, soft cost, and business interruption claims on pollution liability policies.

Claims can be as simple as encountering fill material that was once considered "clean fill," but is now classified as contaminated urban fill. Discovery can result from site investigations, building expansions, or site redevelopment. This scenario played out at a site in California that was undergoing a site assessment by a prospective buyer, where asphalt fill was discovered. The regulatory agency required excavation and off-site disposal as an industrial waste due to its TPH content.

One urban fill related claim involved an industrial property located in Canada owned by a large REIT that was required to complete a site investigation to support refinancing of two adjoining properties. Several outdated Phase I and II ESA reports for the site had already identified the presence of fill material at these locations, however, the consultant that prepared the reports recommended no further action. Despite knowledge of urban fill, the owner elected to demolish the existing buildings and redevelop the entire property. Various contaminants were found in fill beneath the site including TPH, PAHs, and total metals that exceeded Alberta Environmental Tier 1 and Ecological Soil Contact criteria. Upon completion of the demolition phase, all impacted fill material was required to be excavated and disposed off site. The estimated costs for excavation and off-site disposal of approximately 7,000 cubic meters of contaminated fill totaled $775,000.

Another example of a claim associated with historic fill occurred at a site in downtown Los Angeles, CA. The developer executed a ground lease with the City of Los Angeles to construct a mixed use retail/residential project that included a subterranean garage. Predevelopment investigations identified known VOCs and TPH in soil and groundwater associated with a former gasoline station. A limited Phase II investigation was conducted prior to obtaining a pollution liability policy for the site and TPH and VOCs were confirmed on site. Several soil samples detected lead at concentrations above DTSC residential soil screening levels, but the consultant concluded that this was not of a concern and no additional investigations or actions were warranted. After initial grading of the site by the developer, the proposed disposal facility requested characterization of excavated soil and fill material. Nine test pits were advanced on site on the western half of the site and no VOCs, TPH, or metals were reported above screening levels, except for one sample location beneath the basement of the former restaurant. This soil sample detected lead at 198 mg/kg and soluble lead at 10.4 mg/l. The soluble concentration exceeded the WET STLC of 5 mg/l thereby classifying the waste as a California hazardous waste. Approximately 115 cubic yards of lead-impacted soils believed to be a "hot spot" were excavated in the sampling area. Just prior to construction, a site wide investigation was conducted and elevated soil lead levels were found throughout the site. The source of the lead was historic fill on site. Approximately 24,500 tons of lead-impacted soil was estimated to be present beneath the site. The soil remedy chosen was excavation of the lead-impacted soil, on-site treatment by chemical fixation, and off-site disposal to a Class III landfill. The total costs for treatment and disposal was approximately $1.7 million. In this particular claim several samples during the limited Phase II detected lead above residential screening values. This should have triggered further investigation as well as performing a WET analysis to determine waste/fill classification.

Another claim example involved a property developer in Connecticut undertaking development activities for an urban revitalization project consisting of 14 residential units owned by a municipality. During initial site preparation it was determined that urban fill on the site was impacted with PAHs. Remedial efforts consisted of excavating the entire site to between six and ten feet. Due to the soil volume and density, remediation and off-site disposal costs exceeded $3.2 million. One final claim example that also occurred in Connecticut started with a property transfer that required a site investigation. VOCs found in soils and groundwater were attributed to historic releases of solvents from a well known contaminated neighboring property and were not required to be remediated by the site owner. However, this prompted additional soil investigations that identified extensive TPH and PCBs in on site soils. The source was identified as contaminated historic fill placed on the site. Remediation efforts exceeded $1.2 million.

Challenges for developers and owners

For developers, there will continue to be challenges with redeveloping sites within urban settings as well as waterfront properties. Not only will there be concerns with potential former industrial use, but historical fill materials are being encountered more frequently at inadequately characterized sites.

Whereas agency driven investigations have historically focused on identifying former releases at a given site, there is starting to be more attention given to urban and historic fill at sites. In a lot of cases, isolated contaminant releases have commingled with the underlying historic fill. The fill materials can no longer be ignored and pass as background materials that won't require remedial action.

Since developable land continues to be scarce in urban areas, brownfield and infill sites are practical choices for redevelopment into commercial and/or residential uses. However, due to the presence of historic fill and requirements to protect workers and residents from direct contact and exposure to hazardous materials, risk-based residential cleanup standards have been set at very low levels.

Another challenge for developers is that infill sites are typically located in space-constrained dense urban settings that limit the building footprint size. Thus, redevelopment plans now typically incorporate subterranean parking designs. This presents two different challenges for developers since the volume of excavated soil increases and potential reuse on site is no longer a viable option. The presence of historic fill not only creates a potential soil disposal issue, but excavation may require dewatering should shallow groundwater be encountered. If unexpected fill materials containing hazardous constituents are encountered, there is also the potential that both soil and groundwater could exceed regulatory cleanup and/or off-site disposal levels. This can result in unexpected costs and possible project development delays.

During the early due diligence period, developers should focus not only on environmental assessments, but also on geotechnical investigation results to provide a preliminarily indication on whether historic fill underlies the site. This will remove some of the uncertainty going forward during redevelopment of the site. Developers should also fully engage with the overseeing regulatory agency early in the project plan process to develop a soil/fill management plan that provides alternatives for possibly capping impacted materials onsite in lieu of excavation and disposal. As noted, depending on the size/location of the site, on-site reuse or capping may not be a viable option and therefore a well delineated site is even more critical. A greater number of soil borings/samples are typically required at urban fill sites to achieve a certain confidence level that surprises will not be encountered during redevelopment.

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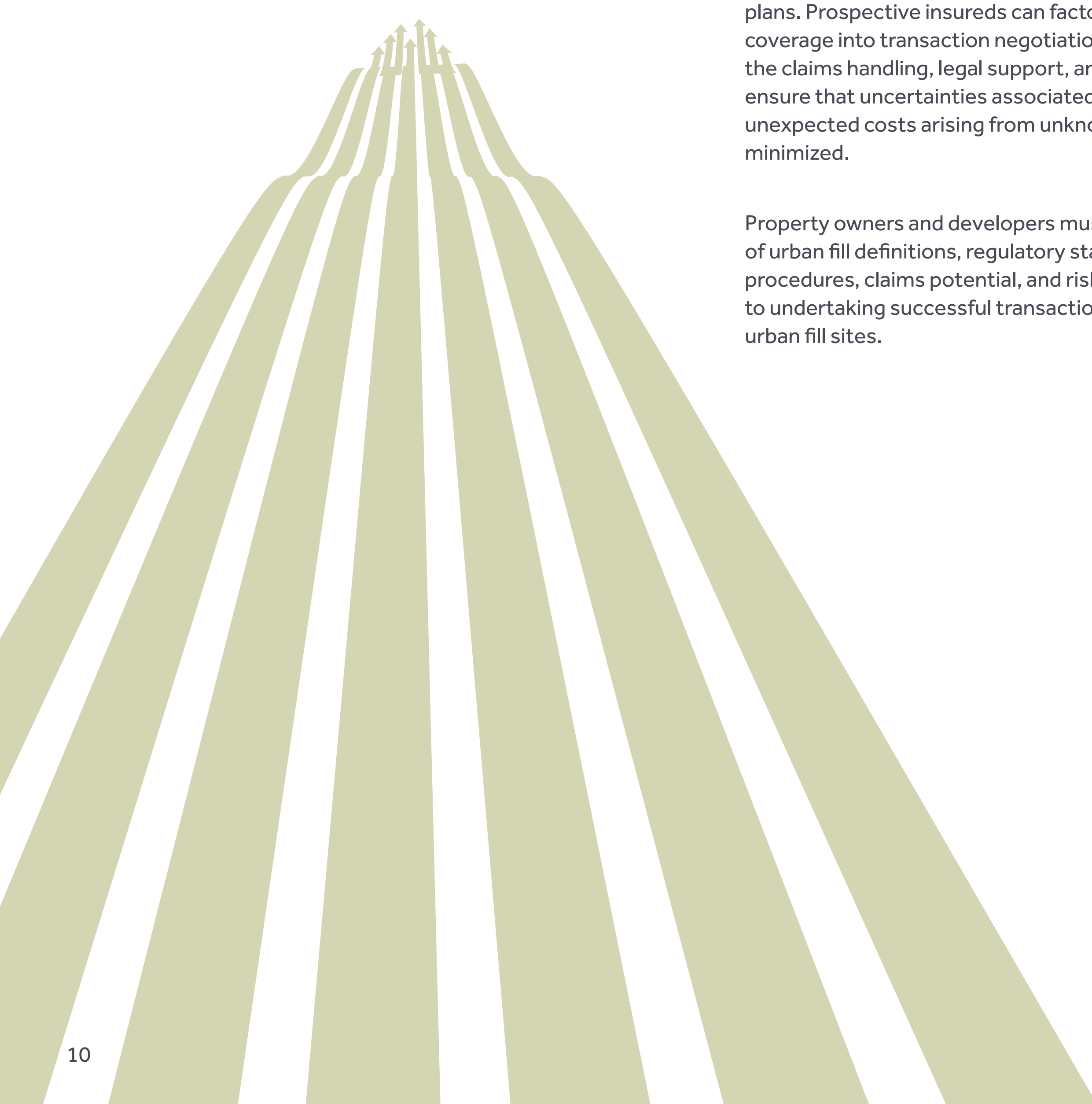
Strategies for transferring risk

Purchase and sale agreements for transactions involving sites with suspected or known urban fill, should address this inherent risk. Escrow funds, cost-sharing, discovery periods, and indemnity agreements can be structured to address urban fill and redevelopment projects.



Another important tool for facilitating a smooth transition from acquisition to site development can involve obtaining environmental insurance coverage for sites that are impaired. XL Catlin provides a Pollution and Remediation Legal Liability (PARLL) policy that transfers risk from the policy holder and minimizes project uncertainties. Insurance products can help address sale agreement gaps and changing regulatory standards.

Prior to providing coverage, most long-term environmental insurance carriers will seek to understand the due diligence and site investigation work completed by the prospective insured. XL Catlin studies available documentation and often provides feedback on the risks associated with urban fill sites and other known pollution conditions. With this knowledge, policies can be tailored to the specific construction and development project plans. Prospective insureds can factor this feedback and policy coverage into transaction negotiations. XL Catlin also provides the claims handling, legal support, and financial strength to ensure that uncertainties associated with project delays and unexpected costs arising from unknown pollution conditions are minimized.

Property owners and developers must have a solid knowledge of urban fill definitions, regulatory standards, due diligence procedures, claims potential, and risk management options prior to undertaking successful transactions and redevelopment of urban fill sites.

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Notes

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