

**June 25, 2024**  
**Analysis of Brownfield Cleanup Alternatives for**  
**100 East National Avenue**

**Introduction and Background**

The Redevelopment Authority of the City of Milwaukee (RACM) was selected to administer a United States Environmental Protection Agency (USEPA) Brownfields Cleanup Revolving Loan Fund (BCRLF). The first Cooperative Agreement was received in 2002, which provided \$1,000,000 in federal assistance over a five-year period. Additional Cooperative Agreements were received in 2003, 2004 (amended the 2003 agreement), 2005, 2006, 2007, 2008 (amended the 2007 agreement), 2009, 2011 (amended the 2009 agreement), 2012 (amended the 2009 agreement), 2013 (amended the 2009 agreement), 2014, and 2023 respectively for a total of \$13,200,000.

On July 10, 2024, a Resolution will be introduced that will allow for RACM to provide up to two loans totaling up to \$1,500,000 loan to East National, LLC for an affordable housing development project from the USEPA BCRLF Program to support environmental remediation at the property located at 100 East National Avenue, Milwaukee, Wisconsin.

The property is currently owned by Kelly Construction & Design, LLC. East National, LLC intends to purchase the property in July 2024, remediate the property, and redevelop the site into a mixed-use building with commercial space and 140 apartment units. The project will include first floor commercial space and a mix of one- and two-bedroom apartment units for households earning between 30% and 80% of the area median income.

Historically, the site was part of a larger tract of land that included the current site (100 E. National Avenue) and east adjoining parcel (120 E. National Avenue) that was occupied by Allis Chalmers (a manufacturer of steam engines, pumps, machine tools and sawmills) from about 1895 through 1935. Barry Trucking operated at the site from approximately 1945 through 2010. Demolition of the Former Barry Trucking facility occurred in November/December 2010 and the larger tract of land was subdivided. The eastern parcel (120 E. National Avenue) was developed into the National Avenue Lofts in 2011 and construction soils were placed across the 100 E National Avenue. The subject site at 100 E National has remained vacant with no structures or improvements since 2010. Currently, approximately 3,780 cubic yards of impacted oil and fill material excavated as part of the redevelopment and construction activities for the east adjoining parcel was placed across this parcel. The impacted soil and fill materials is covered with polypropylene sheeting and topped with non-impacted topsoil. The impacted material and topsoil thickness is estimated to range between 2 to 4 feet.

The subject site became contaminated as a result of its past industrial and commercial uses. Subsurface impacts associated with the former presence of seven underground storage tanks (USTs) formerly containing diesel fuel and waste/used oil are registered as having been closed/removed between 1983 and 1988. In addition, impacts are present associated with historic fill (containing slag, brick, wood, ash, cinders and foundry sand). Residual PVOCs and Petroleum related PAHs present at the site are associated with the former UST systems used and operated by Barry Trucking. Residual PAHs, lead,

and arsenic are likely associated with the historic placement of industrial fill (foundry sand and fly-ash) and from the site's long term industrial use dating back to the late 1890's.

An AAI Phase I ESA dated May 14, 2024, prepared by The Sigma Group, was completed for Bear Development, LLC (with reliance extended to East National, LLC and affiliated parties) prior to the planned July 30, 2024 property sale to ensure the future owner is considered a bona fide prospective purchaser.

Known environmental concerns at the site relate to former underground storage tanks (USTs) and the presence of historic fill. Case closure was issued by the WDNR for the Leaking Underground Storage Tank (LUST) site (BRRTS No. 03-41-557706) and Environmental Repair Program (ERP) site (BRRTS No. 02-41-559307) on November 16, 2016 and January 30, 2018, respectively, with residual soil and groundwater impacts and a continuing obligation (CO) to maintain the existing protective cover or barrier for the protection of human health and the environment. Specifically, residual soil impacted with petroleum volatile organic compounds (PVOCs), polycyclic aromatic hydrocarbons (PAHs), lead and other metals were present at the time of closure on the east and central portions of the property from the surface to the water table. Historic fill and non-native soil fill containing PAHs and lead are present within shallow and deeper soil across the site.

As mentioned above, both WDNR BRRTS cases for this site are closed with continuing obligations, therefore recent investigation work conducted by The Sigma Group (Sigma) has been focused towards preparation of a Historic Fill Exemption (HFE) and Post-Closure Modification (PCM) for construction of the new mixed-use development. In February 2023, Sigma completed development-related subsurface investigation activities to evaluate the potential presence of methane gas below the Site. The initial investigation activities included the advancement of four NR 141-compliant groundwater monitoring wells/gas monitoring points. Based on the concentrations of methane gas identified within the initial gas monitoring points and the residual impacts identified at the time of case closure, Sigma completed additional subsurface investigation activities to further evaluate current site conditions with respect to residual soil and groundwater impacts and determine the nature and extent of methane gas at the Site. The additional subsurface activities were completed between May and August 2023 and included the advancement of 30 soil borings, three of which were completed as groundwater monitoring wells/gas monitoring points, and eight of which were completed as gas/vapor monitoring points. In addition, Sigma oversaw the excavation and construction of a trench box (TB-1) to evaluate gas migration and accumulation potential within the proposed structure and the excavation of two test trenches (TP-1 and TP-2) for further assessment of potential subsurface methane gas generating materials within the vicinity of monitoring well SMW-4. The results of this investigation work were summarized into a NR 506.085 Exemption to Develop a Historic Fill Site and Post-Closure Modification Request for the site and submitted to WDNR on September 26, 2023. Following a technical assistance meeting and e-mail request, an addendum report was submitted to WDNR on April 16, 2024 that included a review of the subsurface lithology and quality and additional soil vapor sampling and methane gas monitoring.

The following paragraphs summarize the soil, groundwater, and vapor findings:

- Soil: Select soil samples were collected from each of the soil borings and submitted for analysis of volatile organic compounds (VOCs), PAHs, arsenic, cadmium and lead. Review of the soil

analytical results indicate residual petroleum VOCs are present at concentrations greater than NR 720 groundwater pathway Residual Contaminant Levels (RCLs) within each of the soil borings advanced at the site and greater than NR 720 non-industrial direct contact RCLs within the soil borings advanced within the vicinity of the former USTs on the northern portion of the site. One soil boring (GP-1), contained tetrachloroethene (PCE) at a concentration greater than the NR 720 groundwater pathway RCL and 1,1,1-trichloroethane (1,1,1-TCA) greater than the laboratory limit of detection (LOD). PAHs were present at concentrations greater than their respective NR 720 groundwater pathway and/or non-industrial direct contacts RCLs within 18 of the 20 soil samples submitted for analysis. Total lead was identified within 16 of the 20 soil samples submitted for analysis at concentrations greater than the Background Threshold Value (BTV) and/or non-industrial direct contact RCL and ranged from 53.4 to 1,730 micrograms per kilogram (mg/kg).

- **Groundwater:** Groundwater samples were collected from each of the seven monitoring wells at the site and submitted for laboratory analysis of VOCs. Review of the groundwater analytical results indicates PVOCs were identified within the samples collected from monitoring wells SMW-3 and SMW-4 (located near the former UST system) at concentrations greater than their respective NR 140 Enforcement Standards (ES) and within monitoring well SMW-6 (located within vicinity of former pump island) greater than the NR 140 Preventive Action Limit (PAL). Chlorinated VOCs (with the exception of chloroform) were not identified at concentrations greater than their respective laboratory LODs within the groundwater samples collected at the site.
- **Vapor:** Review of the results from the soil gas methane investigation indicates methane concentrations during open cap conditions were measured at greater than 1.25% (or greater than 25% of the Lower Explosive Limit (LEL)) were identified within two of the gas monitoring points advanced on the site. Based on the concentrations of methane reported at the site, an active methane mitigation system is considered necessary to properly vent the methane below the asphalt cap to prevent the migration and potential accumulation of methane below the proposed building.

### **Applicable Regulations and Cleanup Standards**

Notification of a release and assignment of BRRTS numbers by the Southeast Region of the Wisconsin Department of Natural Resources (WDNR) is complete, and therefore the site is subject to the requirements of Section 292.11 (3) Wisconsin Statutes (hazardous substances spill law) and Wisconsin Administrative Code chapters NR 700 through NR 749 (which establish requirements for emergency and interim actions, public information, site investigations, design and operation of remedial action systems, and case closure). The borrowers, in coordination with qualified consultants, have completed a NR 506.085 Exemption to Develop a Historic Fill Site and Post-Closure Modification Request (and addendum) for the site in accordance with all applicable state statutes and WAC chapters. The documents have been submitted to WDNR for comment and approval prior to cleanup and will form the basis for the cleanup activities.

Cleanup at the site will continue to be monitored by staff at the WDNR. Cleanup will be targeted to meet relevant industrial standards set forth in Wisconsin Administrative Code (WAC) chapter NR 720

(Soil Cleanup Standards) and WAC chapter NR 746 (Risk screening and closure criteria for petroleum product contaminated sites, and agency roles and responsibilities).

## **Evaluation of Cleanup Alternatives**

This section identifies various remediation alternatives that could be used to address the environmental contamination issues at the 100 East National Avenue site. The “No Action Alternative” is used as the baseline against which the other alternatives are analyzed.

The following broad categories of evaluation criteria were considered in assembling remediation alternatives at the site: effectiveness, implementability, cost, and impacts from potential extreme weather events.

### *Alternative One – No Action / Monitored Natural Attenuation*

The no-action response involves no remediation of residual impacted soil at the site. This response typically serves as a baseline against which the other remedial options and technologies can be compared. The no-action response may be used as the sole remedial action only in the event the prevailing site conditions lead to the determination that the site poses no significant risk to human health or the environment with no controls in place. In that event, implementation of other types of action becomes unnecessary.

1. Effectiveness – The no-action alternative may eventually reduce the magnitude of the existing risk for soil with residual VOC concentrations by natural attenuation processes but does not address the PAH or metals impacted soil. This alternative would not take action to protect public health, safety, and welfare and the environment.
2. Implementability – This alternative is implementable.
3. Cost – This alternative was considered the lowest in terms of present worth cost and disruption to the site. It has no associated capital costs or operation and maintenance costs, although indirect costs of the no action alternative will include a continued blighting influence on surrounding properties which would be manifested in lower property values and a decreased tax base.
4. Sustainability – The United States Global Change Research Program finds that the Midwest region will likely see future climate changes that include an overall increase in winter and summer temperatures, increasing numbers of hot days, and an increasing numbers of wet days. Climate change impacts to the No Action Alternative are expected to be minimal given the lack of development that this alternative would support. While this alternative leaves soil in place and does not lead to trucking emissions or an increase in area landfill volume, the site remains a brownfield with limited redevelopment opportunity, and so would not be considered a “greener cleanup”.

### *Alternative Two – Excavation and Off-Site Landfill Disposal*

Additional excavation and off-site disposal of soil in the areas with residual impacts was evaluated as a possible remedial alternative. Under this alternative, all impacted soils to the depth necessary for construction (approximately 13 feet) would be excavated and disposed of at an area licensed landfill, followed by backfilling of the excavation to the planned grade with unimpacted soil or subbase

aggregate. Under this alternative, neither capping nor registration on the WDNR's GIS database would be required.

1. Effectiveness – This alternative would be effective. However, the site contaminants would be simply moved to an off-site landfill, and the excavation and transportation of the impacted soil may present health and risks that may be greater than the risks posed by leaving the soil in place. In the short term, excavation and off-site transport of impacted soil would temporarily increase hazards to site workers and the public due to the necessary handling and transportation of these soils. In the long term, excavation and off-site disposal may somewhat reduce the magnitude of existing risk at the site by contaminant mass removal compared to no action.
2. Implementability – The implementability of this remedial alternative is low given the cost it would take to excavate, and then backfill, all impacted soils. The site also would experience extreme disruption and be a challenge to stabilize due to the depth of the excavation.
3. Cost – The estimated capital costs are anticipated to be extremely high, at an estimated \$5M.
4. Sustainability – The United States Global Change Research Program finds that the Midwest region will likely see future climate changes that include an overall increase in winter and summer temperatures, increasing numbers of hot days, and an increasing numbers of wet days. Climate change impacts to the Excavation and Off-Site Landfill Disposal Alternative are expected to be possible given that the site is within the Harbor District (close to water) and excavation of all impacted soil could result in a lower overall site elevation which could contribute to future flooding risks. This alternative would also generate excessive greenhouse gases due to the large number of truck trips it would take to transport all impacted soils to an area landfill. These soils would also use an excessive amount of volume in the landfill, and therefore would not be considered a “greener cleanup”.

*Alternative Three – Limited Soil Excavation and Installation of a Vapor/Methane Mitigation System with Engineering and Institutional Controls*

This alternative best fits the planned redevelopment of the site, requiring the removal and off-site disposal of approximately 14,000-16,000 CY of impacted soil along with installation of a vapor/methane system. The excess soil requiring removal would be restricted to impacted material and not clean fill and would be disposed of at a licensed landfill. The vapor/methane abatement system design allows for active ventilation of methane and/or potential residual petroleum vapor that may accumulate beneath the proposed buildings. The site would be listed on the WDNR database to notify the public of residual soil and groundwater impacts. Utilization of the planned redevelopment cover material (building, pavement, and soil cover) was evaluated as a possible long-term remedy to address the residual impacts at the Site. The associated institutional controls would be required for long-term assurance that the remedy remains protective over time.

1. Effectiveness – In terms of technical feasibility, this alternative would upon implementation increase the protection of site workers and the public. In the long term, utilizing excavation and off-site landfill disposal, a vapor/methane mitigation system, and institutional controls would eventually reduce the magnitude of the existing risk by natural attenuation processes while maintaining protection from direct contact and vapor exposures to site workers and the public.

2. Implementability – The implementability of this alternative is high. The use of engineered barriers, methane/vapor mitigation, and institutional controls in conjunction with the WDNR database for soil RCL exceedances is an existing proven mechanism.
3. Cost – Compared to the complete excavation and offsite landfill disposal of impacted soil remediation alternative, the associated capital costs for this option are significantly lower, at approximately \$3.65M, which includes soil excavation and transport (\$0.75M), tipping fees (\$0.85M), engineered caps (\$1.8M), and the subslab vapor/methane system (\$0.25M). Note that the engineered caps also contribute towards advancing the construction project
4. Sustainability – The United States Global Change Research Program finds that the Midwest region will likely see future climate changes that include an overall increase in winter and summer temperatures, increasing numbers of hot days, and an increasing numbers of wet days. Climate change impacts to this Alternative are expected to be minimal given that the site elevation will not change substantially from its current state. This alternative would generate some greenhouse gases due to the need to transport some impacted soils to an area landfill, but would be less than Alternative 2. These soils would also use some amount of volume in the landfill, however it would be less than Alternative 2 and would therefore be considered a “greener cleanup” of the various options considered.

## **Recommendation**

The Remedial Alternatives were evaluated based on their effectiveness, their feasibility of implementation, the costs of each alternative, and their level of sustainability. Based on the above evaluation, the selected final remedy is Alternative Three which uses limited soil excavation with off-site landfill disposal and installation of a vapor/methane mitigation system with engineering and institutional controls. As a whole, this alternative provides both the most efficient cleanup and redevelopment strategy and the best protection for human health and the environment.