August 31, 2023
Analysis of Brownfield Cleanup Alternatives for
147 E Becher Street

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 September 21, 2023, a Resolution will be introduced that will allow for RACM to provide up to a $1,250,000 loan to FS Apartments, LLC for an affordable housing development project from the USEPA BCRLF Program to support environmental remediation at the property located at 147 East Becher Street, Milwaukee, Wisconsin.

Beta-Becher Acquisition Company, LLC c/o Bear Development, LLC acquired the property (147 East Becher Street) and the ownership company (Beta-Becher Acquisition Company, LLC) on December 29, 2021 from the two previous ownership entities: Beta-Becher Acquisition Company, LLC and RDAR Corporation – both of which were affiliated with the prior property owner - Read Development Corporation. FS Apartments, LLC intends to purchase the property, demolish the existing buildings, remediate the property, and redevelop the site for 576 apartment units within 8 new midrise buildings. All of the units in the project will have rents restricted to households earning between 40%-80% area median income and 144 of the units will be restricted to senior residents.

The 147 East Becher Street property was historically occupied with various uses including engine manufacturing, sawmill and woodworking machinery manufacturing, foundry operations, forge operations, coal and iron storage, a blacksmith shop, carpentry shops, machine shops, and support buildings. The site was most recently used for boat storage.

The subject sites became contaminated as a result of their past industrial and commercial uses. The primary source of the soil contamination is the urban historic fill, which has several isolated but delineated (horizontally and vertically) areas of VOC and PCB contamination. There is from 3 to 8 feet (with an area of up to 14 feet along the west side of the site) of historic urban fill that is present over the entire site. The historic urban fill consists of fine to coarse sand and gravel, silty sand, and silty sandy clay with lenses of black coarse foundry sand, slag, wood fragments, glass fragments, and brick fragments. The soil contamination was not detected in soil samples collected from the underlying native (silt and clay) soils.

An AAI Phase I Environmental Site Assessment was completed in July 2021. Additionally, an update to the AAI Phase I ESA is currently being prepared for Bear-Affiliate FS Apartments, LLC (the loan

applicant and future property owner) and related parties, to ensure the future owner is considered a bona fide prospective purchaser.

Phase II site investigations were conducted by Ramboll beginning in between September 2021 to investigate impacts of historical uses of the site. These Phase II activities identified relatively low levels of PAHs, VOCs, and PCBs in soil and VOCs, lead, and PFAS in groundwater. Based on the contaminant concentrations identified, the Wisconsin Department of Natural Resources (WDNR) was notified and an Environmental Repair Site (ERP) (BRRTS #02-41-589088) activity was opened. Additionally, Ramboll submitted an Exemption to Build on a Historic Waste Site request to WDNR (BRRTS# 07-41-589480) due to the low-level contaminant concentrations associated with the historic fill on site.

The following paragraphs summarize soil findings:

- There are relatively low levels of polynuclear aromatic hydrocarbons (PAHs; benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene) and metals (arsenic, barium, and lead) above one or more state standards.
- There are also several isolated and limited areas of shallow (2 to 5 feet deep) volatile organic compounds (VOCs; benzene and naphthalene) in soil with concentrations above one or more of the state standards. In addition, there were two soil samples with total polychlorinated biphenyl (PCB) concentrations that were above the state groundwater protection standard.

The following paragraphs summarize groundwater findings:

- Three VOCs (1,1,1-trichloroethane; 1,1-dichloroethene; and naphthalene) were detected in groundwater but only 1,1-dichloroethene was detected at a concentration above the state drinking water "Preventive Action Limit" (PAL) in a groundwater sample collected from one temporary monitoring well. PAHS (acenaphthene, anthracene, 1- and 2-methylnaphthalene, and naphthalene) were detected in groundwater, however, at concentrations below the state standards.
- Groundwater metals analyses documented lead concentrations above the PAL in groundwater samples collected from three temporary monitoring wells, which was due to sediment in the samples (lead was not detected in the groundwater samples collected from the five state code groundwater monitoring wells at the site.)
- There were seven per- and polyfluoroalkyl substances (PFAS) detected in groundwater, however, the PFAS concentrations detected at the site are below the standards for the two substances (perfluoro octane sulfonamide and perfluoro octane sulfonic acid) that have approved drinking water criteria.

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, will complete a Site Investigation and Remedial Action Plan for the site in accordance with all applicable state statutes and WAC chapters. The Remedial Action Plan will be 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 147 East Becher Street 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 would 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. Impact of potential extreme weather events – 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 as the site is not near a coastline or in a floodplain.

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, the estimation assumed the excavation and offsite disposal of the impacted fill at a permitted disposal facility followed by backfilling the excavation to the planned grade with unimpacted, aggregate. This alternative includes the removal of an estimated 70,000 cubic yards of historic fill, based on existing site data using three dimensional modeling.

1. Effectiveness – This alternative could be somewhat effective, however some residual contamination would still remain. The site contaminants would be simply moved to an off-site landfill, 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, and the generation of extra greenhouse gases during excavation, transportation, and disposal of the material. 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 recent redevelopment work at the site, with significant short-term distruption to the site.
3. Cost – The estimated capital costs are extremely high (approximately $10,000,000).
4. Impact of potential extreme weather events – 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 Institutional and Engineering Controls Alternative are expected to be minimal as the site is not near a coastline or in a floodplain.

Alternative Three – Limited Soil Excavation and Off-Site Disposal with Institutional Controls

This alternative fits the planned redevelopment of the site (requiring the removal and off-site disposal of approximately 20,000 CY of soil to meet the planned grade of the site). The excess soil requiring removal would be restricted to impacted material and not clean fill. 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, excavation and off-site landfill disposal institutional controls would upon implementation increase the protection of site workers and the public. In the long term, utilizing excavation and off-site landfill disposal institutional controls would eventually reduce the magnitude of the existing risk by natural attenuation processes while maintaining protection from direct contact exposures to site workers and the public.
2. Implementability – The implementability of this alternative is high. The use of engineered barriers and institutional controls in conjuction with the WDNR database for soil RCL exceedances is an existing proven mechanism, with no short-term disruption to the Site.

3. Cost – Compared to the complete excavation and offsite landfill disposal of impacted soil remediation alternative, the associated capital costs for this option are much lower.
4. Impact of potential extreme weather events – 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 with Off-Site Disposal Alternative are expected to be minimal as the site is not near a coastline or in a floodplain.

Recommendation

The Remedial Alternatives were evaluated based on their effectiveness, their feasibility of implementation, the costs of each alternative, and the impact of potential extreme weather events. Based on the above evaluation, the selected final remedy is Alternative Three which uses limited excavation and off-site landfill disposal with institutional controls a cap/barrier to address the direct contact pathway, and a WAC NR 140 PAL exemption to address VOC and metals concentrations in groundwater. As a whole, this alternative provides both the most efficient cleanup strategy and the best protection for human health and the environment.