City of Caribou Maine
FY25 Brownfield Cleanup Grant Application
RFA No.: EPA-I-OLEM-OBLR-24-11

ATTACHMENT C
DRAFT ABCA
ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES

Analysis of Brownfields Cleanup Alternatives – Preliminary Evaluation
Steam Plant- Former Caribou Power Plant
142 Lower Lyndon Street, Caribou, Maine
October 23, 2024

Prepared by City of Caribou

I. Introduction & Background

a. Site Location

The Steam Plant (the "Site") at the former Caribou Power Plant, is located at 142 Lower Lyndon Street in the City of Caribou, Aroostook County, Maine.

b. Previous Site Use(s) and any previous cleanup/remediation

The Steam Plant (the "Site") at the former Caribou Power Plant operated as a fossil fuel electric power generation facility from its construction in 1949 until the power plant closed in 2012. The Site has remained vacant and the Steam Plant building is deteriorating and has become a target for trespassing theft and vandalism.

In July 2023, United States Environmental Protection Agency (USEPA) initiated a Time Critical Removal Action to abate and properly dispose of asbestos-containing materials in/on the Steam Plant that were determined to pose an immediate threat to human health and/or the environment. USEPA anticipates that their Time Critical Removal Action will be completed in November 2024. Therefore, additional cleanup activities to abate and remove remaining asbestos-containing materials that were determined not to pose an immediate threat to human health or the environment along with other hazardous building materials (i.e., universal wastes including a mercury release into concrete, lead-based paint, etc.) and waste oils identified in/on the Steam Plant will be completed under a FY2025 Brownfields Cleanup Grant.

c. Site Assessment Findings

On August 5, 2021, County Environmental Engineering, Inc. (County) completed a Phase I ESA at the Caribou Power Plant site, including the Steam Plant, in accordance with ASTM International Standard Practice E 1527-13 and U.S. EPA All Appropriate Inquiry (AAI), 40 CFR Part 312. The Phase I ESA identified Recognized Environmental Conditions (RECs) associated with documented and potential unknown/unreported releases of hazardous substances and petroleum products (HSPP) at the Caribou Power Plant site, including the Steam Plant. Based on the findings of their Phase I ESA, County recommended that a Phase II ESA should be completed to confirm or dismiss their RECs. County also observed potential hazardous building materials, including asbestos-containing materials, lead and mercury-containing components, universal wastes, and waste oils throughout the Steam Plant and recommended a HBMS to identify and quantify those hazardous building materials and waste oil.

On May 8, 2022, County completed a HBMS for the Caribou Power Plant, including the Steam Plant, to identify and quantify hazardous and/or regulated building materials in/on

the building and waste oils in various electrical equipment, tanks, drums and vessels throughout the Steam Plant.

On May 14, 2022, County completed a Phase II ESA for the Caribou Power Plant, including the Steam Plant, in accordance with ASTM E1903-19. Results of the Phase II ESA identified HSPP-impacted soil and groundwater at the Caribou Power Plant, including areas surrounding the Steam Plant. However, the contaminant concentrations detected in soil and groundwater at the Site did not exceed their respective federal or state cleanup standards/guidelines. Therefore, soil and groundwater remediation was not required nor recommended.

d. Project Goal (site reuse plan)

The re-use plan for the Site is to demolish the vacant and dilapidated Steam Plant to facilitate redevelopment of the former Caribou Power Plant property, including the Steam Plant, as a riverfront greenspace/park.

e. Regional and Site Vulnerabilities

According to the United States Global Change Research Program, trends for the northeast region of the United States include increased temperatures, increased precipitation with greater variability, increased extreme precipitation events, and flooding. According to Federal Emergency Management Agency (FEMA) Flood Zone Map, the eastern portion of the Site is located within a 100-year flood zone of the Aroostook River. Therefore, its critical to clean up the Steam Plant and redevelop the Site as a riverfront greenspace/park as proactive measures to increased precipitation that may affect flood waters and stormwater runoff that could exacerbate the dilapidated conditions of the Site and release hazardous building materials into the environment.

II. Applicable Regulations and Cleanup Standards

a. Cleanup Oversight Responsibility

The City of Caribou will hire a qualified environmental professional (QEP) to oversee and document the cleanup in accordance with local, State, and Federal requirements. In addition, all documents prepared for the Site will be submitted to the Maine Department of Environmental Protection's (MEDEP's) Voluntary Response Action Program (VRAP).

b. Cleanup Standards for Major Contaminants

The Steam Plant is proposed to be demolished. As such, the following regulations apply for cleanup prior to and/or concurrent with demolition activities.

Asbestos: MEDEP Chapter 425 stipulates that all friable asbestos-containing materials as well as non-friable asbestos-containing materials that are in poor condition be removed or otherwise appropriately abated before it is disturbed during any renovation or demolition activity.

Lead-Based Paint: Handling of components coated with lead-containing paint *at any concentration* requires compliance with the Occupational Safety and Health Administration (OSHA) lead standard (*Lead in Construction*, 29 CFR 1926.62). Cleanup and abatement activities, such as lead removal, stabilization and encapsulation, should be

completed to meet OSHA, MEDEP, and U.S. EPA regulatory requirements, and to eliminate lead exposure to contractors and current and future Site users.

Universal Wastes: Used or non-functional universal waste is required to be disposed or recycled off-site in accordance with MEDEP's Solid Waste regulations.

Waste Oils: Used or non-functional oil (e.g. waste oil) is required to be disposed of or recycled off-site in accordance with MEDEP's Chapter 860 Waste Oil Management Rules.

c. Laws & Regulations Applicable to the Cleanup

Laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act, MEDEP environmental laws, and local Caribou by-laws and ordinances. Federal, State, and local laws regarding procurement of contractors to conduct the cleanup will be followed. The City of Caribou will competitively bid and retain a qualified environmental professional, in accordance with the competitive procurement provisions of 40 CFR Part 31.36. In addition, all appropriate permits (e.g., State notifications) will be obtained prior to the work commencing.

III. Evaluation of Cleanup Alternatives

a. Cleanup Alternatives Considered

To address hazardous building materials and waste oils identified at the Steam Plant, three different cleanup alternatives were evaluated, as detailed below:

- Alternative #1: No Action.
- Alternative #2: Targeted Hazardous Building Materials Removal with Partial Management In-Place alternative. This alternative includes:
  - Removal of all identified asbestos-containing materials.
  - Removal of all identified universal waste items and waste oils to be properly recycled or disposed.
  - Surfaces coated with lead-based paint would be stabilized via scraping of loose, flaking, and chipping paint, and encapsulated beneath subsequent paint layers. Lead-based painted surfaces disturbed during this process would be required to be disposed off-site at a licensed facility as "hazardous waste" and/or stabilized on-site prior to off-site disposal.
  - Remaining lead-based paint and would be managed under an Operation & Maintenance (O&M) program during future reuse. The O&M program would require periodic surveillance of encapsulated materials and outline best work practices during future renovation/disturbance.

- Alternative #3: Full Hazardous Building Materials Abatement. This alternative involves the proper removal, transport, and offsite disposal of all identified hazardous building materials identified in/on the Steam Plant, including asbestos-containing materials, lead-based paint, universal wastes and waste oils. This alternative would require full building demolition to complete.

b. Cost Estimate of Cleanup Alternatives

To satisfy U.S. EPA requirements, the effectiveness, implementability, and cost of each alternative must be considered prior to selecting a recommended cleanup alternative.

Effectiveness – Including Vulnerability/Resiliency Considerations

- Alternative #1: The No Action alternative is not effective in controlling or preventing the exposure of future receptors to hazardous building materials at the Site; nor is it protective of human health and the environment.

- Alternative #2: Targeted Hazardous Building Materials Removal with Partial Management In-Place is an effective way to eliminate and/or significantly reduce the potential risk of exposure to trespassers and future Site workers by removing all identified asbestos-containing materials, all identified PCBs subject to U.S. EPA regulations, and all identified universal wastes and waste oils. Lead-based painted surfaces disturbed during this process would be required to be disposed off-site at a licensed facility as "hazardous waste" and/or stabilized on-site prior to off-site disposal. Remaining lead-based paint would be encapsulated and managed in-place, thereby mitigating exposure risks.

- Alternative #3: Full Hazardous Building Materials Abatement is an effective way to eliminate the potential risk of exposure to trespassers and future Site workers by removing all hazardous building materials and waste oils from the Site concurrent with building demolition.

Implementability

- Alternative #1: No Action is easy to implement since no actions will be conducted.

- Alternative #2: Targeted Hazardous Building Materials Removal with Partial Management In-Place for remaining hazardous building materials is not practicable to implement since the building no longer usable as a Steam Plant and has deteriorated to a point of unsafe working conditions. In addition, the asbestos-containing roof would be removed under this alternative and a new roof would not be installed, which would lead to further building deterioration. Therefore, the Steam Plant must be demolished to safely abate hazardous building materials in/on the building.

- Alternative #3: Full Hazardous Building Materials Abatement is relatively easy to implement. The necessary services and materials to complete the remedial tasks are readily available, including the necessary equipment and contractors.

Cost

- There will be no costs under Alternative #1: No Action.
- Alternative #2 is estimated to cost $6,000,000, as provided on Table 1.
- Alternative #3 is estimated to cost $4,000,000, as provided on Table 2.

c. Recommended Cleanup Alternative

The recommended cleanup alternative is Alternative #3: Full Hazardous Building Materials Abatement. This alternative is practical, implementable, and effective in protecting human health and the environment. It is also an effective way to prevent trespassers and future workers from coming into direct contact with hazardous building materials and waste oils.

Alternative #1: No Action cannot be recommended since it does not address site risks; and Alternative #2 is cost prohibitive and not practicable to implement since the building must be demolished to safely abate hazardous building materials in/on the building.

d. Green and Sustainable Remediation Measures for Selected Alternative

To make the selected alternative greener, or more sustainable, several techniques are planned. The most recent Best Management Practices (BMPs) issued under ASTM Standard E-2893: Standard Guide for Greener Cleanups will be used as a reference in this effort. The City of Caribou will require the cleanup contractor to follow an idle-reduction policy and use heavy equipment with advanced emissions controls operated on ultra-low sulfur diesel. The number of mobilizations to the Site would be minimized and erosion control measures would be used to minimize runoff into environmentally sensitive areas. In addition, the City of Caribou plans to ask bidding cleanup contractors to propose additional green remediation techniques in their response to the Request for Proposals for the cleanup contract.

Table 1: Summary of Estimated Remediation Costs
Targeted Hazardous Building Materials Abatement and Partial Management In-Place Alternative
Steam Plant- Former Caribou Power Plant
142 Lower Lyndon Street
Caribou, Maine

Targeted Hazardous Building Materials Abatement & Partial Management In-Place Alternative	**Number**	**Units**	**Unit Cost**	**Total**
Abatement of Hazardous Building Materials				
Site Security & Erosion/Sedimentation Controls	1	LS	$20,000	$20,000
Partial Hazardous Building Materials Abatement	1	LS	$3,000,000	$3,000,000
Asbestos Roof Removal/Roof Replacement	1	LS	$1,475,040	$1,475,040
Lead-Based Paint Stabilization	1	LS	$500,000	$500,000
Universal Waste Removal	1	LS	$50,000	$50,000
Waste Oil Removal	1	LS	$550,000	$550,000
Operations and Management Plan & Long-Term Oversight	20	Years	$15,000	$300,000
Remediation Engineering Design/Oversight/Closure Report				
VRAP Application	1	LS	$5,000	$5,000
Cooperative Agreement	1	LS	$19,460	$19,460
Community Relations Plan & Public Meetings	1	LS	$8,000	$8,000
Design, Bidding Documents & Cleanup Planning	1	LS	$25,000	$25,000
Cleanup Oversight	1	LS	$32,500	$32,500
Closure Reporting & Grant Closesout	1	LS	$15,000	$15,000
TOTAL				**$6,000,000**

Assumptions and Footnotes:

1 - Engineering cost estimates based on recent comparable projects in Maine.

Table 2: Summary of Estimated Remediation Costs
Full Hazardous Building Materials Abatement Alternative
Steam Plant- Former Caribou Power Plant
142 Lower Lyndon Street
Caribou, Maine

Full Hazardous Building Materials Abatement Alternative	Number	Units	Unit Cost	Total
Abatement of Hazardous Building Materials				
Site Security & Erosion/Sedimentation Controls	1	LS	$20,000	$20,000
Integral Abatement of Hazardous Building Materials and Demolition	1	LS	$3,265,040	$3,265,040
Universal Waste Removal	1	LS	$50,000	$50,000
Waste Oil Removal	1	LS	$550,000	$550,000
Site Stabilization	1	LS	$10,000	$10,000
Remediation Engineering Design/Oversight/Closure Report				
VRAP Application	1	LS	$5,000	$5,000
Cooperative Agreement	1	LS	$19,460	$19,460
Community Relations Plan & Public Meetings	1	LS	$8,000	$8,000
Design, Bidding Documents & Cleanup Planning	1	LS	$25,000	$25,000
Cleanup Oversight	1	LS	$32,500	$32,500
Closure Reporting & Grant Closesout	1	LS	$15,000	$15,000
TOTAL				**$4,000,000**

Assumptions and Footnotes:

1 - Engineering cost estimates based on recent comparable projects in Maine.