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# **DRAFT Analysis of Brownfields Cleanup Alternatives**

**Thompson's Point  
Portland, Maine**

*Prepared for and funded by:*

**Brownfields Assessment Grant #: BF-00A00234  
Greater Portland Council of Governments  
389 Baxter Blvd #201, Portland, ME 04103**

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City of Portland  
389 Congress Street, Portland, ME 04101**

*On behalf of:*

**Forefront Partners I, LP  
Forefront Commons I, LLC  
Forefront Hoteliers, LLC  
501 Danforth Street  
Portland, Maine 04102**

**April 18, 2018**

*In Reference to:*

Credere Project No. 11001128

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## 1. INTRODUCTION

Crede Associates, LLC (Crede) was retained by Forefront Partners I, LP (Partners), which also represents future owners Forefront Hoteliers, LLC (Hoteliers) and Forefront Commons I, LLC (Commons) to prepare this Analysis of Brownfields Cleanup Alternatives (ABCA) for Thompson's Point in the City of Portland, Maine (Site). These entities are using a loan from Greater Portland Council of Government's (GPCOG's) and the City of Portland's (City's) U.S. Environmental Protection Agency (EPA) Brownfield Revolving Loan Funds (RLFs; Grant numbers: BF-00A00234, BF-00A00199, respectively) to perform cleanup activities at the Site. This ABCA is being prepared to encompass all of Thompson's Point except lots 1 through 3 (previously developed) and 7 (currently under redevelopment) to facilitate current redevelopment plans receiving RLF funding and to facilitate future redevelopment plans for the remaining lots not currently receiving RLF funding. The following report provides a technical evaluation of remedial alternatives for addressing the identified environmental conditions at the Site.

### 1.1 PURPOSE AND SCOPE

The purpose of this report is to evaluate appropriate cleanup alternatives to mitigate environmental conditions at the Site identified through previous environmental investigations. Consistent with the findings of these environmental investigations and to meet the requirements of the Maine Department of Environmental Protection (DEP) Voluntary Response Action Program (VRAP) No Action Assurance Letter (NAAL), which is included as **Appendix A** for reference, the following environmental conditions at the Site will be addressed:

- Surficial and accessible soil across the Site containing concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals exceeding applicable residential, park user and/or commercial Maine DEP Remedial Action Guidelines for Sites Contaminated with Hazardous Substances (RAGs)
- Potential vapor intrusion from petroleum impacted groundwater at the Site and vicinity
- Hazardous building materials (HBM) documented to be present within/on existing Site buildings

### 1.2 SITE DESCRIPTION

The Site comprises 22.07 acres of the 30.13-acre Thompson's Point and consists of 15 lots (Lots 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, and 19). For purposes of redevelopment, the lots have been broken into sub-groups, which are described below. Areas 1 through 4 are the areas currently being funded by the RLF loan with the remaining two grouped areas pending possible future cleanup funding:

- **Area 1 – Suburban Propane/Northern New England Passenger Rail Authority (NNEPRA)** comprises Lots 14 and 15 that total 3.16 acres. Lot 14 is currently developed with a warehouse building (Building 1-5 or the NNEPRA building) and Lot 15 is developed with a brick office building (Building 1-1), a red vacant former office building (Building



1-2), a maintenance building (Building 1-3) and a loading dock storage building (Building 1-4)<sup>1</sup>. All buildings with the exception of Building 1-1 are planned for demolition.

- **Area 2 – East Loop Road** comprises Lot 8 and a length of roadway within the ‘common area’. The only Site building is a 1,790-square foot concrete block structure on Lot 8 (Webber Building) that is used as a backstage area during concerts, otherwise for storage and is planned for demolition.
- **Area 3 – Outdoor Event Center** comprises Lots 9 through 13 and totals 3.09 acres. This area is developed with a roof structure that was formerly referred to as the Barnstormer building. This area is currently used for winter activities including, open area on Lot 9, the Rink at Thompson's Point with the overhead roof structure on Lot 10, a warming yurt on Lot 12, and material storage on Lots 11 through 13. During the summer months, these lots are used as a concert venue. This area has been operating with a temporary soil cover system that requires more permanent installation to support long term continued use as an event center.
- **Area 4 – Hotel** comprises Lot 6 and totals 1.15 acres. This area is currently used as an unpaved parking lot for the winter activity area and the adjoining Brick South building (Lot 3).
- Lots 4 and 5 comprise 1.51 acres and are currently used as paved/unpaved parking lots. The lots are also used for minor material storage and stockpiling.
- The Panhandle comprises Lots 16 through 19 totaling 4.67 acres and is currently used for parking in the southeast corner of Lot 17 and otherwise used for stockpiling of soil. Access to these lots is gated. Grubbing and tree clearing occurred on Lot 19 in 2017 with stabilization of the slope with an engineered barrier. As the remainder of this lot has not been remediated, no closure reporting has been completed.

Additional acreage is made up of common area including driveways, stabilized perimeter slopes, and the intertidal zone to the low water mark.

Lots not included as part of this ABCA are Lots 1 (Brick North), Lot 2 (Parking Lot), and Lot 3 (Brick South), which were previously redeveloped and have received VRAP Certificates of Completion (CoCs) from Maine DEP; Lot 7, which is being redeveloped simultaneously by a separate unrelated entity that is completing cleanup and preparing their own Brownfields programmatic documents specific to that project; and a portion of the ‘common area’ roadway onto the peninsula, which has also been permanently redeveloped but has yet to be reported and receive a COC.

Water is provided to the Site by the Portland Water District, sewer services by the City of Portland, electrical service by Central Maine Power, and natural gas by Unitil. The Webber Building is mostly unheated with the exception of electric space heaters when needed. Building 1-5/NNEPRA

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<sup>1</sup> For consistency, building numbers correspond to numbers used in TRC's *Limited Investigative Survey Report for Asbestos and Other Regulated Materials* for Lot 14 and 15 dated November 28, 2016. Nomenclature is 1, for Area 1, followed by the building number from TRC's report (i.e., -1, -2, -3, -4, and -5).



building is not currently heated but was formerly heated by a fuel oil fired system. The boiler for this system was located in the southern portion of the building that was demolished in 2010 and was supplied by a 275-gallon No. 2 fuel oil aboveground storage tank (AST), which remains along the southern interior wall of the Building 5-1. Buildings 1-1 through 1-4 are unheated or have a propane fired heating system.

### 1.3 SITE HISTORY

The Site was developed with railroad operations as early as 1885, and the majority of the Site was covered with railroad sidings. At the time, the peninsula was smaller and did not extend as far south into the Fore River. The northwest portion of the Site (the Panhandle) was developed with the Thompson Fowler Hog Slaughter House. By 1909, railroad operations had transitioned to the Maine Central Railroad, and Lot 4 was developed with a blacksmith shop that had a large coal shed to its north. By 1938, use of Thompson's Point was transitioning from railroad to various commercial and industrial uses. The U.S. Government occupied Thompson's Point around 1949 for use as an Ordnance Plant; however, specific buildings associated with this use are not known.

Some minor filling of the western side of the peninsula occurred prior to construction of a private garage in the 1940s on Lot 6. In approximately 1955, a concrete product manufacturing building was constructed between Lots 6, 8, and 13, and a baseball field was present on Lots 16 through 19. Additionally, during the 1950s, fill continued to be added to the western and southern sides of the peninsula, an office building was constructed on Lot 5, and the current Site building on Lot 8 was constructed. By 1970, the building on Lot 10 was constructed.

Various commercial and industrial businesses rotated through the onsite buildings through the 1960s and 1970s, and by 1986, the concrete products manufacturing building was removed. Through 2013, the Site was used for abundant material storage and container storage associated with commercial and industrial occupants of the Site at the time. By 2014, former Site buildings had been removed leaving only the current Site building on Lot 8 and the roof structure on Lot 10, as well as the offsite Brick North and Brick South buildings. In 2015 the southern portion of the Site was redeveloped as a concert venue with an open lawn space on Lots 8 and 9, and as a winter activities area.

### 1.4 PROPOSED REUSE

The Site is planned to be redeveloped for mixed residential, commercial, and hospitality-related development. The following describes specific redevelopment plans for each area of the Site:

- Area 1 is planned to be redeveloped with a parking garage, residential tower, inn, and mixed retail and office commercial space. This parcel may serve to connect Thompson's Point to the adjoining transportation center to the north and will be the primary gateway onto the peninsula.
- Area 2 will be constructed as a roadway to loop the existing roadway on the western side of the peninsula to the cross road north and south of Brick North (Lots 1 and 2).



- Area 3 will continue use as an outdoor event center with winter activities during the winter months associated with The Rink at Thompson's Point and concert and festival activities during the summer months. However, cleanup will entail construction of a more permanent engineered barrier system to replace the currently temporary system that was installed prior to 2015 for short term trial use of the Site as an event center.
- Area 4 will be developed with a hotel and associated parking lots.
- Lots 4 and 5 are currently being used for parking and have no immediate redevelopment plans; however, these parcels have been identified as a possible alternate location for the residential area of the Site.
- Lots 16 through 19 are planned for a potential office and residential development; however, these plans are for the distant future.
- Common areas will continue to be redeveloped as roadways to access the peninsula. The perimeter of the peninsula is planned to be stabilized more permanently above the currently armored slope in conjunction with redevelopment on adjoining lots.

These reuse plans are subject to change slightly relative to the location of certain elements across the peninsula; however, the remainder of this ABCA is organized such that the conditions specific to each particular use can be applied to wherever the use is located.



## 2. SUMMARY OF PREVIOUS INVESTIGATIONS

Previous environmental investigations were conducted at the larger Thompson's Point property typically excluding Lots 14 and 15. Prior report findings relative to the Site are summarized below. Reports pertaining to Lots 14 and 15 are specifically indicated.

### **Phase I Environmental Site Assessment (ESA), Gemini Geotechnical Associates, Inc. (Gemini), February 6, 1991**

Gemini prepared a Phase I ESA for the larger Thompson's Point in February 1991. The report summarized the use of the Thompson's Point buildings at the time of the report, a brief history of Thompson's Point, a summary of information obtained from the City of Portland departments, and review of Maine DEP files. The following environmental concerns were identified with regard to the Site:

- Files contained in the Maine DEP, City of Portland Building Department files (likely the current Code Enforcement Department microfiche files) and Fire Department files indicated numerous underground storage tanks (USTs) and ASTs were present in the vicinity of the Site at that time or had previously been removed. The report concluded there were many contradicting locations, sizes, content, and removal details associated with the historical tanks. However, of the tanks reported to have been removed, only one reportedly leaked; which tank leaked is not known.

Gemini concluded these numerous USTs as well as offsite (Lots 2 and 3) unmaintained stockpiles were the primary environmental concerns at Thompson's Point. Conflicting records indicate many different UST volumes with limited removal or location information. Based on the identified environmental concerns, Gemini recommended a soil and groundwater investigation.

### **Phase II ESA, Gemini, January 6, 1992**

Gemini completed a Phase II ESA based on the results of the 1991 Phase I ESA on behalf of Casco Northern Bank. Prior UST locations, stockpile areas (Lot 2 and 3 offsite), observed surface soil impacts near a former auto shop (Lot 6 south of Brick South), and historical impacts associated with use as a railroad and bomb casing manufacturing plant were targeted for assessment as part of the Phase II ESA.

Groundwater assessment indicated total petroleum hydrocarbon (TPH) concentrations of 1,200 micrograms per liter ( $\mu\text{g/L}$ ) in the southern portion of the Site (Lot 9) in well OW-4. (*Note: There is no former or current guideline for evaluation of TPH concentrations in Maine; however, a former guideline of 50  $\mu\text{g/L}$  for gasoline and diesel range organics [GRO and DRO] would indicate 1,200  $\mu\text{g/L}$  to be an elevated concentration*). Additionally, trace volatile organic compound (VOC) 1,1-dichloroethene was detected in well OW-7 near the former auto shop building (Lot 6). Metals were also identified in groundwater in exceedance of the EPA Maximum Contaminant Levels (MCLs) at the time; however, concentrations were well below current Maine DEP construction worker exposure scenario RAGs, which is the only applicable exposure scenario since the Site groundwater is not used for drinking.





Soil in the vicinity of the auto shop (B-6 and B-7 on Lot 6) was found to be impacted with petroleum at TPH concentrations ranging from 160 to 1,100 milligrams per kilogram (mg/kg). (*Note: There is no former or current guideline for evaluation of TPH concentrations in Maine; however, a former guideline of 10 mg/kg for GRO and DRO would indicate these concentrations to be highly elevated*). VOCs, polychlorinated biphenyls (PCBs), and metals were below laboratory reporting limits in soil samples.

Based on these results, Gemini recommended removal of petroleum impacted soil in the vicinity of the former garage building. Since groundwater at the Site was not used for drinking water, no action was recommended for the metals concentrations in groundwater.

### **NAAL, Maine DEP, February 26, 1999**

The NAAL issued by Maine DEP on February 26, 1999, indicated a soil removal action had been undertaken by United States Army Corp of Engineers (USACE) and a test pit investigation had been completed in 1998. The soil removal action is presumed to be that discussed in Spill Report P-576-1990; however, no documentation of a follow-up test pit investigation after the 1992 Phase II ESA was identified in the Maine DEP file.

### **Phase I ESA, Credere, December 5, 2011**

Credere completed a Phase I ESA at the Site on December 5, 2011, for GPCOG for the purpose of identifying recognized environmental conditions (RECs) as defined by the ASTM E 1527 standard. The Phase I ESA identified the following RECs for the larger Thompson's Point property:

- REC-1: Site impacts from historical use of the Site for railroad operations, metal working, automobile repair, bomb shell casing manufacturing, textile production, paperboard production, and concrete product manufacturing since the late 1800s
- REC-2: Possible impacts associated with fill placed around the perimeter of the peninsula
- REC-3: Documented soil and groundwater contamination in the central steam plant UST area, auto repair area (former building west of the Site), and documented spill locations
- REC-4: Possible impacts from many historical USTs with limited removal documentation
- REC-5: Possible release from discarded drums and gasoline containers
- REC-6: Possible releases to the subsurface from floor drains and from a drywell
- REC-7: Impacts associated with street sweepings, stockpiling, and snow dumping
- REC-8: Staining observed in the area of the former electrical transformers

The report identified the following *de minimis* condition (DMC), which does not represent a threat to human health or the environment and would not be the subject of enforcement action if brought to the attention of the appropriate regulatory authority:





- DMC-1: 55-gallon drums and container storage of waste oil and chemicals throughout the Site buildings

Additionally, the report identified five non-scope considerations relating to hazardous building materials in the Site buildings, including possible asbestos, lead paint, PCB-containing building materials, possible PCB-containing light ballasts, and universal and other hazardous waste.

Based on review of the RECs and other findings and their location across Thompson's Point, RECs 1 through 7, DMC-1, and the additional non-scope considerations pertain to the Site.

### **Phase II ESA Report, Credere, July 11, 2012**

To confirm or dismiss the RECs and non-scope conditions identified in the December 5, 2011, Phase I ESA, Credere completed a Phase II ESA at the larger Thompson's Point property for GPCOG. With regard to the RECs and non-scope findings that pertain to the Site, Credere drew the following conclusions:

- REC-1: Surface soil, subsurface soil, and groundwater impacts were confirmed to be present associated with historical use of the Site for railroad operations and other industrial processes.
- REC-2: Use of impacted soil to fill the perimeter and western side of the peninsula was confirmed.
- REC-3: Soil and groundwater petroleum impacts were confirmed to be present in areas of previous releases. Specifically, the greatest area of groundwater contamination was identified in monitoring well MW-6 located in the northeast corner of Lot 6 from a historical kerosene release. VOCs, extractable petroleum hydrocarbon (EPH) petroleum fractions and target compounds (i.e., PAHs), and metals were detected. Of the detected compounds, ethylbenzene, naphthalene, 2-methylnaphthalene, and EPH petroleum fractions exceed current Maine DEP RAGs.
- REC-4: Several anomalies were identified during a ground penetrating radar (GPR) survey of the Site. As not all the anomalies were investigated, the REC was concluded to be inconclusive pending additional investigation; however, no anomalies of typical UST reflection were identified in the surveyed area.
- REC-5: Surface soil impacts associated with drums formerly at the Site was confirmed. No impacts were identified near the former discarded gasoline tank.
- REC-6: Impacts associated with floor drains and a potential drywell were confirmed. Petroleum odors and oil were observed in two floor drains within the Site building.
- REC-7: Impacts associated with the stockpiled street sweeping and snow dump soil were confirmed.
- DMC-1: Drums and other containers were visually confirmed present; however, no releases from the drums were reported.
- NC-1: The presence of asbestos was confirmed in the Lot 8 building



- NC-2: The presence of lead paint was confirmed at Thompson's Point. No lead paint was identified in the Webber building.
- NC-3: The presence of Toxic Substances Control Act (TSCA)-regulated PCBs was confirmed in other buildings at Thompson's Point; however, no TSCA-regulated PCBs were identified in the Webber building. Non-TSCA regulated PCBs greater than 1 mg/kg were identified in the Webber building
- NC-4: The presence of potentially PCB-containing light ballasts was confirmed through observation in the Webber building; however, quantities were not reported.
- NC-5: The presence of universal and/or hazardous waste was confirmed through observation in the Webber building; however, materials and quantities were not reported.

Based on these conclusions, Credere made the following recommendations with regard to the Site and future redevelopment:

- Preparation of a Work Plan prior to redevelopment to properly managed identified areas of contamination
- Additional evaluation of groundwater exposure risk during redevelopment activities
- Care during redevelopment if unexpected objects are encountered in case of unknown USTs
- Further investigation of the floor drains to assess outlets and possible subsurface discharges
- Incorporation of institutional and engineering controls into redevelopment plans to limit exposure to identified contamination
- Proper abatement of identified asbestos during redevelopment
- Proper handling and disposal in accordance with state and federal regulations of non-TSCA regulated PCBs during redevelopment
- Removal of universal and/or hazardous waste

### **VRAP Work Plan, Revision 2, Credere, February 27, 2013**

Credere prepared a VRAP Work Plan for submittal with the Thompson's Point Maine DEP VRAP application. The work plan was prepared to address petroleum, VOCs, metals and PAH impacted soil and groundwater and hazardous building materials. Soil and Groundwater Management Plans (SGMP) were prepared in conjunction with the Work Plan to outline appropriate management of these media. The Work Plan outlined the following key points with regard to the Site:

- Petroleum saturated soil encountered during site work activities will be removed from the Site.
- Other soil considered special waste will be relocated onsite to the greatest extent possible consistent with design plans and covered with a soil cover system. (*Note: the specifications for this item were updated as part of this ABCA to reflect planned Site use and current State guidance requirements.*)



- Collection and proper management of excess groundwater produced during redevelopment. (*Note: the specifications for this item were updated as part of this ABCA to reflect planned Site use and current State guidance requirements.*)
- Field screening of floor drain release locations, collection of soil gas samples for vapor intrusion screening or presumptive installation of a vapor barrier or mechanical design elements to prevent exposure from possible vapor intrusion.
- Proper removal and disposal of universal and/or hazardous wastes in the Site buildings.
- Abatement of identified asbestos prior to redevelopment of the Site buildings.
- Proper management and disposal of non-TSCA regulated PCBs during redevelopment/demolition of the Site buildings.

### **VRAP NAAL, Maine DEP, March 6, 2013**

Maine DEP prepared a NAAL for Forefront Partners I, LP indicating Forefront Partners I, LP and its successors and/or assigns will be granted liability protection against contamination identified and listed therein as long as the following criteria are met. (*Note: This NAAL was reissued in January 2018 and is discussed as a subsequent document.*)

### **Phase I ESA Update, Credere, March 12, 2013**

Credere prepared a Phase I ESA Update for Thompson's Point on behalf of Forefront Partners I, LP. Based on the prior Phase I ESA and results of the 2012 Phase II ESA, Credere identified the following updated list of RECs:

- REC 1: Documented metals, VOCs, PAHs, and EPH contaminated soil, groundwater, and sump sludge (compilation of previous RECs 1, 2, 3, 5, 6 and 7)
- REC 2: Possible USTs and other anomalies remaining at the Site and associated contamination (previous REC 4)
- REC 3: Possible subsurface discharge from floor drains with unknown discharge locations (previous REC 6)

The following DMCs were identified:

- DMC 1: Drums, ASTs, and various containers throughout the Site
- DMC 2: TSCA-regulated PCBs in building materials that are not a threat of release, but are regulated for removal

Additionally, asbestos, lead paint, and universal wastes were identified as non-scope items.

Based on review of the RECs and DMCs, and their location across Thompson's Point, RECs 1, 2 and 3, DMCs 1 and 2, the presence of asbestos and universal waste pertain to the Site.

Based on these findings, Credere made the following recommendations that pertain to the Site:

- Proper management/abatement of contaminated soil, groundwater and sludge, asbestos, non-TSCA regulated PCB-containing building materials in accordance with applicable regulations and guidelines and the Maine DEP VRAP Work Plan

### **Asbestos Manifests, Lot 10 Barnstormer Building, January 10, 2014**

Asbestos was abated from the Barnstormer Lot 10 building and transported to Juniper Ridge Landfill on January 10, 2014. A total of 11.38 tons of asbestos was disposed.

### **Supplemental Soil Sampling, Crede, April 10, 2014**

During the planning stages for the outdoor event center (Lots 6 through 13), Crede completed a Supplemental Soil Sampling program to assess surface soil conditions, onsite stockpiles for viability as cover material, and review the prior Phase II ESA analytical data for surface exposure points. Based on these results, the majority of Lots 6, 8, 9, 10, 12, and 13 required covering when assessed for Park User exposure. Additionally, one stockpile was identified as acceptable for use as cover material, while two other stockpiles required relocation onsite and covering, or offsite disposal. The limited area was recommended to be covered with a temporary cover system (up to 2 years of use) consisting of a geotextile and 4 inches of clean loam.

### **Drum Removal, Enpro, May 31, 2014**

The drums identified as DMC 1 in the March 2013 Phase I ESA were removed from the Site on May 21, 2014. Two drums of oily water, three drums of ethylene glycol, and three drums of propylene glycol were disposed at Enpro Services of Maine in South Portland, Maine, under manifest number NHZ00124015. An acetylene tank was disposed at Interstate Refrigerant Recovery of Foxboro, Massachusetts, under manifest NHZ00124016. Lastly, a 275-gallon empty fuel tank was recycled under ticket number TJAIBR.

### **Limited Investigative Survey Report for Asbestos and Other Regulated Materials, TRC Environmental Corporation (TRC), November 28, 2016 (Lots 14 and 15 only)**

TRC completed a limited investigative survey for asbestos and other hazardous/regulated materials for Lots 14 and 15 (Buildings 1-1 through 1-5) for Maine DEP. The following materials were identified to be asbestos-containing materials (ACM) in Buildings 1-1 and 1-2, and the roof of Building 1-5:

- Floor tile
- Mastic
- Thermal system insulation (TSI)
- Pipe elbows
- Caulk
- Roofing tar
- Glue pucks (i.e. glue daubs)



Lead-containing paint was identified in Buildings 1-1 through 1-3. In addition, various paint colors throughout Buildings 1-1 through 1-3 and on the exterior of Building 1-5 were identified to have PCB concentrations greater than 1 part per million (ppm) but less than 50 ppm. TRC also inventoried the universal and other hazardous/regulated wastes throughout the buildings.

### **Limited Phase II ESA, TRC, December 2016 (Lots 14 and 15 only)**

TRC Environmental Corporation completed a limited Phase II ESA for Lots 14 and 15 of Thompson's Point for Maine DEP. As part of the Phase II investigation, four soil borings were advanced and completed as monitoring wells and eight surface soil samples were collected. Soil and groundwater samples were submitted for laboratory analysis of varying combinations of VOCs, EPH, volatile petroleum hydrocarbons (VPH), PCBs, and lead. Based on the results of the limited Phase II ESA, TRC developed the following findings:

- A 550-gallon UST was suspected to be located on the western portion of Lots 14 and 15; however, the geophysical survey did not indicate the presence of a UST on either lot.
- Soil and groundwater analytical results were below applicable regulatory criteria included in the report based on planned use of the Site at the time; however, exceed the residential and park user criteria that are now applicable based on the new planned residential and mixed use of this are of the Site.

Based on the findings of this limited Phase II ESA and the potential for redevelopment of the Site as commercial space likely to include retail and event venue facilities along with paved parking and landscaped areas, TRC recommends the following:

- While the results of this limited Phase II ESA do not indicate significant environmental impacts, the possibility exists for soil/groundwater contamination to be present in areas not assessed based on the long industrial use of the Site.

Future redevelopment entities should consider developing a SGMP to address potentially impacted soil/groundwater in support of be prepared for possible worker health and safety considerations if potentially impacted soil/groundwater are identified at the Site during activities that involve subsurface disturbance.

If soil/groundwater contamination is identified during the proposed redevelopment, management of impacts can likely be accomplished with appropriate material management/disposal, exposure barriers (capping, vapor barriers, etc.) and/or land use restrictions (Declaration of Environmental Covenants [DEC] etc.).

### **Phase I ESA, Credere, February 8, 2017**

Credere prepared a Phase I ESA for Thompson's Point on behalf of Forefront Partners I, LLC. Based on review of historical sources, environmental databases, interviews, User provided information, Site reconnaissance, and judgment by the Environmental Professional; Credere identified the following RECs:



- REC #1 – Documented soil and groundwater contamination associated with historical spills, USTs, and historical uses
- REC #2 – Undocumented/unassessed releases associated with historical use, poorly documented USTs, other subsurface anomalies, building floor drains and a drywell
- REC #3 – Documented sediment impacts associated with the Julie N oil spill (based on the legal property description to the low water mark)

### **Limited Soil Sampling, Lots 18-19, Credere, March 21, 2017**

Credere completed limited soil sampling of the grubbing area and stockpiles located at the northwestern end of the Panhandle on Lots 18 and 19 to assess for the presence of fill material and for Site contaminants of potential concern (COPCs) in the surface soil and stockpiles.

Credere collected soil samples from four test pits (one grab sample from each test pit) and soil samples from two stockpiles (one composite sample from each stockpile). All samples were analyzed for PAHs and Resource Conservation and Recovery Act (RCRA) 8 metals. Based on field observations and laboratory sample results, Credere drew the following conclusions:

- Urban type fill material was not observed in the grubbing area during test pit excavations. Granular fill was observed; however, sample concentrations were below the laboratory reporting limits.
- Soil in the grubbing area would not be considered special waste per Maine DEP Solid Waste Management Rules Chapter 400 – General Provisions and would not require disposal at an appropriately licensed facility if removed from the Site. Therefore, stumps removed from this area would not be comingled with regulated soil and can be handled as standard yard waste at the Shaw Brothers yard.
- Stockpile sample results were below Maine DEP RAGs; therefore, the soil can be used as fill or cover material throughout the larger Thompson's Point property.

### **Soil Stockpile Screening, Lots 18-19, Credere, July 5, 2017**

As part of a Maine DEP March 27, 2017, response memo to the above Limited Soil Sampling report, DEP requested field screening with an X-ray fluorescence (XRF) meter, oil in soil shake tests, and photoionization detector (PID) as the stockpiles were reworked to ensure no contamination that would limit the stockpiles' reuse potential was present on the interior of the stockpiles.

Approximately 60 yards of soil was reworked for use as cover material on the back slope where grubbing had occurred to stabilize the slope. Soil was screened per approximately every 5 cubic yards, and no evidence of contamination was identified by the screening methods. Therefore, the stockpiled soil was placed as cover material and seeded on the sloped area of Lot 19.





### **Maine DEP VRAP NAAL, January 11, 2018**

Maine DEP updated the prior 2013 NAAL for Forefront Partners I, LP to include provisions to allow for updating the Work Plan and SGMP to reflect a change in proposed Site reuse from strictly commercial to mixed commercial and residential. Additionally, previously unincorporated Lots 14 and 15 were amended to the NAAL. The updated NAAL require the following criteria be met:

- Soil disturbed during redevelopment be managed in accordance with the December 12, 2012, VRAP Work Plan and associated SGMP and/or subsequent Maine DEP approved revisions, including installation of a soil cover system over contaminated soil reused onsite to prevent exposure
- Groundwater be managed in accordance with the VRAP Work Plan and associated December 12, 2012, Groundwater Management Plan and/or subsequent Maine DEP approved revisions
- Proper management and removal of universal and/or hazardous wastes from the Site
- Proper handling of non-TSCA regulated PCB-containing building materials
- Abatement of asbestos in accordance with State and Federal regulations
- Lead paint management in accordance with the VRAP Work Plan
- Soil screening after building demolition or to evaluate the vapor intrusion potential of nearby documented contamination
- Recording of a deed restriction (DEC) at the Cumberland County Registry of Deeds that prohibits soil disturbance and the extraction of groundwater without notification to Maine DEP and references an Environmental Management Plan (EMP) to be developed for the Site

The referenced Maine DEP approved revisions to the SGMP are included as part of this ABCA.





### 3. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) was developed using the findings of the previous investigations and will be updated in subsequent reports as new information becomes available. This CSM includes a description of the physical setting of the Site, COPCs, nature and extent of contamination, exposure pathways, and potential human and environmental receptors.

#### 3.1 SITE DESCRIPTION

A detailed Site description consisting of Site use, Site location as depicted on **Figure 1**, and Site utilities is included in **Section 1.2**.

#### 3.2 SITE HISTORY

A description of Site history as it relates to current environmental conditions at the Site is included in **Section 1.3**.

#### 3.3 PHYSICAL SETTING

##### Topography

According to the United States Geological Survey (USGS) Topographic Map of the Portland West Quadrangle, Maine, topography at the Site is generally flat. The local area slopes gradually downward toward the Fore River to the southeast and southwest. An excerpt from the topographic map has been included as **Figure 1**.

##### Geological Characteristics

###### Surficial Geology

According to the Maine Geological Survey map, (MGS) Surficial Geology of the Portland West Quadrangle, Maine, and prior investigations, the Site is underlain by the Presumpscot formation, which consists of silt, clay, and minor sand deposited on the sea floor during the late-glacial marine submergence. According to previous environmental investigations across Thompson's Point, soil consists of silty sand and gravel fill with anthropogenic components such as black ash, glass, bricks and other debris to depths of between 2 and 6 feet, underlain by soft, silty clay typical of the Presumpscot Formation.

###### Bedrock Geology

According to the MGS map, Bedrock Geology of the Portland West Quadrangle, Maine, the Site is underlain by Silurian to Ordovician fine-grained quartz-plagioclase-biotite phyllite with abundant carbonate or calc-silicate mineral depending on the metamorphic grade of the Eliot Formation within the Merrimack Group. Bedrock was not encountered during soil boring advancement for the 2012 Phase II ESA or the 2017 Phase II ESA on the adjoining Lot 7.



## **Hydrology**

The Site is located within the surficial drainage basin of the Fore River located approximately 50 feet from the west Site boundary. Stormwater flows via roof drains, likely to the sanitary sewer system as no exterior discharge was observed. Based on previous hydrogeologic investigation completed during Credere's 2012 Phase II ESA and Phase II ESA at the adjoining Lot 7, groundwater across Thompson's Point ranges in depth from approximately 5 to 13 feet below ground surface (bgs) and is inferred to flow radially outward from the center of the peninsula.

Review of the MGS Significant Sand and Gravel Aquifer map for the Portland West Quadrangle, Maine, indicates the Site is not located within a significant sand and gravel aquifer.

## **Changing Climate Concerns**

Based on the National Oceanic and Atmospheric Administration (NOAA) interactive map of Sea Level Rise and Coastal Flooding Impacts (), sea level rise of up to 6 feet and associated increased coastal flooding is not expected to impact the Site.

The Site is located adjacent to the Fore River. According to FEMA Flood Zone Map 2300510013B, the perimeters of the peninsula are located within Zone A2, where base flood elevations have been determined during inundation by a 100-year flood; however, the majority of the Site is within Zone C, which have been determined to be outside the 500-year flood plain. Greater storm frequency and intensity in a changing climate may result in more frequent high water levels and more frequent flooding of the southern portion of the Site. Increased frequency of extreme weather events may also impact exterior portions of the Site, and may result in increased erosion of improperly stabilized urban fill.

Based on the nature of the contaminants at the Site, a changing groundwater level may impact exposure to certain contaminants at the Site due to the changing distance between the water table and planned new Site foundations.

Based on the nature of the proposed reuse of the Site, changing temperature, wildfires, changing dates of ground thaw/freezing, changing ecological zone, and saltwater intrusion table are not likely to affect the Site.

## **3.4 SOURCE AREAS & CURRENT COPCS**

### **Source Areas**

The following source areas were identified at the Site based on the previous investigations at the Site:

- Urban fill throughout the Site
- Petroleum impacts to soil and groundwater due to former USTs throughout the Site or from general industrial historical use
- Site building components



- Universal and other regulated hazardous waste

### **COPCs**

Based on the identified source areas and previous environmental investigations, the following are COPCs for the Site:

- PAHs
- Metals (primarily arsenic, copper, antimony and lead)
- EPH
- VOCs
- Asbestos
- Lead paint
- PCB-containing building materials
- Mercury and/or PCBs in certain universal wastes

### **3.5 NATURE AND EXTENT OF CONTAMINATION**

The inferred extent of COPCs based on currently available data is as follows:

#### **PAHs and Metals**

PAHs and metals (lead, copper, antimony and arsenic) were detected within the layer of observable fill above native silty clay in SB-4 and TP-4, as well as two surface soil samples (SS-6 and SS-10) during the 2012 Phase II ESA at the Site and from surface soil samples collected during TRC's limited Phase II ESA at Lots 14 and 15. PAHs are likely attributed to the historical use of the Site for commercial and industrial uses, as well as the period during the 1960s and 1970s when the Site was filled to expand the usable area of the peninsula. Although PAHs were not detected in other soil samples, the fill layer was present throughout the Site; and due to the heterogeneous nature of these types of urban fills, PAHs are considered a COPC for fill soils across the entire Site.

Arsenic, copper, lead, and antimony were detected at concentrations that exceed the applicable regulations in at least one soil sample locations advanced during the 2012 Phase II ESA. These metal detections are likely attributed to the same source as the PAHs; and therefore, are considered COPCs for the entire Site.

Based on the nature of PAHs not readily dissolving in water, this COPC is not expected to be found in groundwater. In addition, metals were not previously detected in groundwater in exceedance of construction worker RAGs. Arsenic and antimony were detected above the residential RAGs in MW-6 and MW-8, respectively; however, as the groundwater is not planned as a drinking water source, these metals are not currently a concern.



## **EPH and VOCs**

Based on the results of the 2012 Phase II ESA, EPH petroleum fractions were encountered in subsurface soil above applicable RAGs in TP-4, and EPH petroleum fractions and VOCs were detected in groundwater in MW-3 and MW-6 above Maine DEP Petroleum Guidelines. EPH and VOC compounds are likely associated with a petroleum release from one or more former USTs at the Site. As each former UST location has not been directly assessed, there is also the potential of additional locations of EPH and VOC contamination to be present throughout the Site.

Based on the volatile concentration identified in MW-6 and possible groundwater within 6 feet of a future foundations, there is potential for vapor intrusion in this vicinity based on the criteria listed in Section 6.4.1 of the Maine DEP Petroleum Guidelines.

## **Asbestos**

ACM has been identified in/on several buildings on Lots 8, 14, and 15 of the Site during the 2012 Phase II ESA and 2016 Limited Investigative Survey. ACM included the following for the respective Site buildings:

- Lot 15 Building 1-1
  - 2,000 square feet of green floor tile and black mastic on the second floor, room 14
  - 1,000 square feet of black 2'x1' floor tile in the attic
  - 100 linear feet of gray thermal system insulation (TSI) throughout
  - 25 square feet of gray elbow materials throughout
  - 20 windows worth of white window caulk
  - 20 square feet of glue pucks behind bathroom mirrors
- Lot 15 Building 1-2
  - 250 square feet of green floor tile and black mastic in room 1
- Lot 14 Building 1-5
  - 8,800 square feet of black layered tar roofing
- Webber building
  - Pipe insulation in the boiler room
  - Refractory around the chimney

No ACM was identified in Building 1-3. Building 1-4 was not surveyed because it was constructed in the 1990s.

## **Lead Paint**

Lead paint was confirmed to be present on several Site buildings on Lots 14 and 15 including Building 1-1, 1-2, 1-3, and 1-5. Building 1-4 was not sampled because it was constructed in the



1990s. No lead paint was identified on Webber building. Of the lead paint containing buildings, the paint was in relatively stable condition on all buildings except Building 1-2 where exterior lead paint was observed to be flaking to the surrounding ground surface. These lead impacts can be managed in conjunction with the urban fill related COPCs described above.

### **PCB-Containing Building Materials**

PCB-containing building materials were confirmed to be present in Site buildings at concentrations greater than 1 mg/kg but less than 50 mg/kg on Lots 14 and 15. The following materials were identified to contain PCBs greater than 1 mg/kg for Site buildings:

- Building 1-1
  - Red paint on the first floor, rooms 2 through 4 walls
  - Light-blue paint on the first floor, room 5 walls
- Building 1-2
  - Light-green paint on the first floor, rooms 1 through 3 walls
  - Dark-gray paint on the first floor stairway
  - White paint on the first floor, room 1 walls and ceiling
  - Gray paint on the second floor, room 1 floor
  - Tan paint on the first floor, room 1 closet wall
  - Red paint on the first floor, room 2 walls
- Building 1-3
  - Mint-green paint on the room 4 walls
  - Blue paint on the rooms 2 and 5 floors
  - Red paint on the rooms 3 and 4 floors
  - Peach paint on the room 5 walls
  - White paint on the room 1 walls
  - Tan paint on the room 3 walls
- Building 1-5
  - Exterior white paint
- Webber building
  - light-yellow interior wall paint

### **Universal and Other Regulated Hazardous Waste**

Universal waste in the form of possible PCB ballasts, fluorescent lighting, exit signs, fire extinguishers, maintenance materials (e.g., paints, cleaners, adhesives, etc.), and thermostats have



been observed throughout Site buildings. Generally, these materials were intact or in usable conditions and the COPCs (e.g., mercury, PCBs) would be contained to the respective item.

### 3.6 EXPOSURE PATHWAYS AND POTENTIAL RECEPTORS

Exposure pathways describe how a human or environmental receptor comes into contact with contaminants that may be present at the Site. Potential migration pathways through groundwater, surface water, air, soils, sediments, and biota were considered for each COPC and each source. A migration pathway is considered an exposure pathway if there is a mechanism of contaminant release from primary or secondary sources, a transport medium, and a point of potential contact with receptors. Both current and potential future releases and migration pathways to receptors are considered. Exposure pathways presented in the CSM include the following:

- |                    |   |
|--------------------|---|
| Inhalation:        | This pathway is primarily associated with soil or groundwater contamination within 30 (petroleum volatiles) to 100 (non-petroleum volatiles) feet of an occupied structure or preferential pathway. This pathway is applicable when receptors may inhale impacted media in the form of contaminated vapor. This pathway is also applicable when contaminated soil and/or groundwater are exposed via an excavation. |
| Dermal Absorption: | Exposure via dermal absorption occurs when receptors are exposed to chemical concentrations present in soil, groundwater, surface water, or hazardous building materials through direct contact with the skin.  |
| Active Ingestion:  | The active ingestion pathway represents exposure which may occur through the active ingestion of contaminant concentrations via a drinking water supply well, through agricultural products, or through direct consumption of soil (e.g., typically by children or improper hygiene/health and safety of soil workers).   |
| Incidental Uptake: | This pathway is applicable when receptors may incidentally inhale or ingest impacted media in the form of contaminated dust, soil, chips, or airborne asbestos fibers.  |

Potential Receptors are categorized by duration of exposure and intensity of use at the Site. The receptor categories described in the CSM include the following:

- |                     |   |
|---------------------|---|
| Resident            | The residential receptor is defined by high durational exposure and high intensity usage that may occur through gardening, digging, and recreational sports. This group includes the occupants of a residential property or a residential neighborhood, or a daycare. |
| Park User:          | Park users are characterized by low duration, i.e., less than two hours per day, and low intensity usage such as that which would occur during activities such as walking, shopping, and bird watching. This scenario assumes exposure to children and adults.        |
| Commercial Workers: | Commercial receptors are those which are present at the Site for long durations but with low intensity exposure such as indoor office workers.  |



Excavation or Construction Worker: Excavation or construction workers are present at the Site for short durations though intensity of use is high, such as during non-routine activities including construction or utility work. Examples include utility and construction contractors and landscapers.

### 3.7 CONCEPTUAL SITE MODEL SUMMARY

COPCs at the Site include PAHs and metals in surficial soil across the entire Site, EPH and petroleum fractions and VOCs in groundwater and subsurface soil in certain areas of the Site, and hazardous building materials in the form of ACM, lead paint, and PCB-containing building materials, as well as universal and other regulated hazardous waste in the Site buildings with the exception of Building 1-4.

Based on the planned redevelopment of the Site for mixed residential, retails, commercial, and hospitality-related development, receptors at the Site would include construction workers during redevelopment, children and their parents (i.e., park users) during use of the entertainment venue or retail establishments, employees and facility maintenance of new businesses (i.e., commercial workers), and future residents.

Exposure pathways for all receptors to COPCs include inhalation due to the possible presence of petroleum within proximity of a planned occupied structure and construction workers within excavations; dermal absorption through direct contact with contaminated soil or groundwater; active ingestion by construction workers employing poor hygiene or children; and incidental uptake of impacted soil in the form of asbestos fibers or dust.





## 4. CLEANUP GOALS AND APPLICABLE GUIDELINES

The goal relative to the identified COPCs is to eliminate or manage the risks to human health and the environment through proper management, mitigation, and/or disposal of identified COPCs. To achieve this objective, the following cleanup goals or guidelines will be applicable to the cleanup:

### **Soil and Groundwater**

The remediation goal for the impacted soil and fill materials on the exterior of the Site and likely beneath the Site buildings is to eliminate exposure to excavation/construction workers during the redevelopment and future residents, passive users, and commercial workers after redevelopment. Remediation will be considered complete when the exposure pathways are reduced/eliminated such that exposure to the COPCs are below the Maine DEP RAGs for the resident, park user, and commercial worker use scenario for soil. Exposure to groundwater is limited once construction is complete, but groundwater contamination may contribute to vapor concerns within future Site buildings, which warrants protective measures to prevent potential vapor intrusion. Soil and groundwater concentrations may not be reduced to below the RAGs; however, concentrations remaining at the Site will be protected from human contact by a means of exposure prevention.

Based on the results of the previous investigations, excess soil generated under the selected alternative that cannot be reused onsite would be considered special waste. If excess soil is generated, it will be disposed offsite at an appropriately licensed landfill or recycling facility. Offsite disposal will be done in accordance with Maine DEP Chapter 400 – Solid Waste Management.

### **Asbestos Containing Materials**

Construction work involving exposure or potential exposure to any concentration of asbestos is regulated by OSHA 29 CFR 1910. The cleanup goal for ACM is any ACM to be impacted by renovation or demolition activities be properly removed prior to these activities to eliminate exposure to excavation/construction workers during the redevelopment and future residents, patrons, and commercial workers after redevelopment. Post renovation conditions at the Site should be safe for re-occupancy as defined in Maine DEP Chapter 425: Asbestos Management Regulations (Chapter 425). Proper removal of ACM to be impacted by renovation or demolition activities in accordance with Chapter 425 is crucial to achieving this goal. Asbestos removal, handling, and oversight will be conducted by appropriately trained and certified personnel. Project monitoring and confirmatory air sampling will be conducted by a third party Maine DEP certified asbestos air monitor.

### **Lead Paint and PCB-Containing Building Materials**

Where lead paint and PCB-containing building materials have been identified, building materials waste generated under the selected alternative that cannot be reused onsite would be considered special waste and will be disposed offsite at an appropriately licensed landfill or recycling facility. Offsite disposal will be done in accordance with Maine DEP Chapter 400 – Solid Waste Management.



If materials with PCB concentrations are identified that would be characterized as PCB Bulk Product Waste according to 40 CFR 761, then these materials would need to be removed and disposed in accordance with 40 CFR 761.

### **Universal and Other Regulated Hazardous Waste**

Materials that would be characterized as universal, hazardous, or other regulated waste materials, including fluorescent light bulbs and ballasts, thermostats, fire extinguishers, exit signs, containers of waste, storage tanks, and out-of-service boilers, if present, will be removed from service during the proposed redevelopment activities. As such, the goal of the remediation is to properly manage and dispose of universal, hazardous, or otherwise regulated waste materials in such a way as to prevent a release. Universal or other regulated waste will be identified and managed in accordance with Maine Hazardous Waste Management Regulations – Chapters 850 through 857, 49 CFR 100-199 – Transportation of Hazardous Materials, and 40 CFR 256 – Guidelines for Development and Implementation of State Solid Waste Management Plans.



## 5. PRESUMPTIVE REMEDIAL MEASURES

The goal relative to the identified COPCs is to eliminate or manage the risks to human health and the environment through proper management, mitigation, and/or disposal of identified COPCs. To achieve this objective, the following presumptive remedial measures will be applicable to the cleanup:

### **Installation of Sub-Slab Ventilation System and Vapor Barrier**

Redevelopment at the Site will include construction of new buildings. To meet the requirements of the NAAL, a vapor barrier and passive sub-slab ventilation system will be installed beneath the new Site building(s) concurrent with building construction. This system will effectively manage potential risk posed by contaminated soil gas and will be maintained throughout the lifecycle of the Site. The passive vapor intrusion mitigation system beneath the new building will consist of a venting layer consisting of granular material and perforated piping that vents vapors above the roof line consistent with a typical radon-style system. This ventilation will be used in conjunction with a vapor barrier installed as part of the foundation.

Presumptive Cost:

Area 1 \$25,676  
Area 4 \$25,676  
**Total: \$51,325**

### **Asbestos Abatement**

Redevelopment of the Site will include demolition of five buildings and significant renovations to the sixth. As required by Maine DEP Chapter 425, asbestos is required to be properly abated prior to demolition of the five buildings. Based on the planned gutting of the sixth building (Building 1-1), asbestos will require abatement as well since renovations cannot proceed until the asbestos is removed. Therefore, abatement of asbestos is considered a presumptive remedy. Abatement will be completed in accordance with applicable State and Federal regulations by appropriately licensed contractors.

Presumptive Cost:

Area 1 \$28,600  
Area 2 \$10,000  
**Total: \$38,600**

### **Disposal of Lead and PCB-Containing Demolition Materials**

As part of the above described demolition, building materials that contain lead or concentrations of PCBs above 1 mg/kg will require proper disposal at an appropriately licensed landfill. As these buildings are in poor conditions and cannot be reused, the demolition and incidental required disposal is considered a presumptive remedy to permit redevelopment at the Site.



Presumptive Cost:

Area 1 \$36,275

Area 2 \$9,500

**Total: \$45,775**

**Petroleum-Saturated Soil Removal**

EPH and VOCs remain COPCs because of the numerous UST locations throughout the Site that were not directly assessed for evidence of a release. If petroleum-saturated soil is encountered during remedial activities, it will be removed as required by the Maine DEP Petroleum Guidelines Section 2 and properly disposed offsite.

Presumptive Cost (assumed 20 cubic yards from Site):

**Total: \$1,300**

**Universal and Other Regulated Hazardous Waste**

Remediation of out-of-service universal and other regulated hazardous waste material in the Site buildings is considered a presumptive remedial measure as these items are considered no-longer suitable for use due to condition and removing these items from the Site buildings for proper disposal is the only alternative that will allow the successful redevelopment of the Site as planned.

Presumptive Cost:

Area 1 - \$10,000

Area 2 - \$5,000

**Total: \$15,000**

The following total presumptive cost will be carried through the subsequent alternative analysis.

**Total Presumptive Cost: \$152,000**



## 6. DESCRIPTION OF REMEDIAL ALTERNATIVES

The remedial actions selected for the Site should minimize the potential for human exposure and/or improper disposal of COPCs at the Site. Multiple remedial alternatives are available to address the identified COPCs at the Site. However, based on past experience at sites with similar contaminants and conditions, alternatives were pre-screened for general advantages and disadvantages and the following three (3) remedial alternatives were selected for further evaluation and comparison:

- Alternative #1 – No Action
- Alternative #2 – Selective removal of PAH and metal contaminated soil/fill, installation of an engineered barrier and stabilization of lead paint (in Building 1-1) to accommodate design plans; and institutional controls
- Alternative #3 – Completed removal and proper disposal of PAH and metal contaminated soil/fill and complete removal of lead paint (from Building 1-1); and institutional controls

These remedial alternatives were evaluated for implementation at the Site and are further discussed in the following sub-sections.

### **Alternative #1 - No Action Alternative**

A “No Action” alternative signifies that no remediation activities would be implemented at the Site. The “No Action” alternative does not include a means for mitigating or eliminating potential exposure to impacted soil/fill, soil vapor, or groundwater both during and following redevelopment. Therefore, the potential for human exposure continues to exist for future patrons, residents, excavation/construction workers, and commercial workers. This alternative is presented and discussed throughout the subsequent portions of this report as a baseline comparison, and represents the existing conditions at the Site.

### **Alternative #2 – Selective removal of PAH and metal contaminated soil/fill, installation of an engineered barrier and stabilization of lead paint (in Building 1-1) to accommodate design plans; and institutional controls**

Under this alternative, contaminated soil/fill located on the Site would be managed as needed during the Site building(s) construction and installation of utilities to accommodate construction/design plans, and Building 1-1 would be renovated with lead removal/stabilization sufficient to minimize lead exposure in a commercial environment. Impacted soil would be relocated throughout the Site to allow for appropriate fill balance to meet required grades for each area. Excess soil that cannot be accommodated at the Site would be disposed offsite as special waste at a licensed landfill.

PAH and metal contaminated soil/fill that can be reused onsite would be covered with an engineered barrier system. The engineered barrier systems would include the following designs:

- Installation of hardscape (i.e., asphalt or concrete parking areas, sidewalks, foundations, patios, etc.) with appropriate top course and sub-base materials



- 1 foot of clean fill materials over a marker layer in landscaped (lawn areas, planting beds, event center field, etc.) and 2 feet of clean materials over any areas design specifically for child oriented outdoor play that are not well-established grass or hardscape (e.g., mulched and tire chipped play areas that would permit digging), if any

This alternative also includes blasting of some interior lead paint to accommodate renovation of Building 1-1 into commercial office space and stabilization of any exterior paint (limited to windows and trim) to prevent continued release to the environment. This building maintenance has been limited over the last several decades and many areas will require stabilization of overpainted and/or flaking painted surfaces for aesthetic purposes and to minimize exposure to the excessive lead painted surfaces by future occupants.

In addition to limited soil removal, installation of an engineered barrier, and lead stabilization in Building 1-1; institutional controls would be implemented at the Site through a DEC consistent with the Maine "UECA", 38 M.R.S.A. § 3001 et seq. Filing of the DEC with the Site deed will minimize potential exposure to remaining contaminants through restrictions on soil excavation and groundwater extraction, and ensure the maintenance of the engineered barrier system and vapor mitigation systems. The DEC will also document areas of lead paint to remain in place in Building 1-1 and will prohibit use of Building 1-1 for residential purposes until appropriate lead inspection is completed to ensure lead hazards are not present. These controls will ensure longevity of the alternative through maintenance and monitoring, and ensure future owners, users, or utility workers do not disturb contaminants remaining at the Site; or if disturbance is necessary, that the Maine DEP will be notified and contaminants will be properly managed under the direction of an Environmental Professional in accordance with the applicable regulatory guidelines.

Following the completion of redevelopment activities, potential risk posed by concentrations of PAH and metal contaminated soil/fill that may remain at the Site and lead paint in Building 1-1 will be managed through the preparation and use of an EMP. The EMP will govern future activities with regards to soil, groundwater, lead paint and soil vapor, and describe the inspection and maintenance requirements for institutional controls located at the Site.

**Alternative #3 – Completed removal and proper disposal of PAH and metal contaminated soil/fill and complete removal of lead paint (from Building 1-1); and institutional controls**

This alternative would use standard techniques to remove and properly dispose of all contaminated soil (petroleum, PAH and metal contaminated soil) located/encountered at the Site to meet applicable Maine DEP RAGs. Based on the current understanding of the extent of impacted soil (i.e., the entire fill interval), all fill located above the native clay layer would be removed with confirmatory sampling required to document adequate removal.

This alternative would also utilize standard techniques to fully remove all lead paint from the interior and exterior of Building 1-1. These techniques would consist of blasting nearly all interior painted surfaces and manual scraping of exterior windows and trim..



In addition to the soil removal and stabilization of hazardous building materials, institutional controls would be implemented at the Site through a DEC consistent with the Maine "UECA", 38 M.R.S.A. § 3001 et seq. Filing of the DEC with the Site deed will minimize potential exposure to remaining contaminants through restrictions on groundwater extraction, and ensure the maintenance of vapor mitigation systems. These controls will ensure longevity of the alternative through maintenance and monitoring, and ensure future owners, users, or utility workers do not disturb contaminants remaining at the Site; or if disturbance is necessary, that the Maine DEP will be notified and contaminants will be properly managed under the direction of an Environmental Professional in accordance with the applicable regulatory guidelines.

Following the completion of redevelopment activities, potential risk posed by concentrations of hazardous substances that may remain at the Site will be managed through the preparation and use of an EMP. The EMP will govern future activities with regard to inspection and maintenance requirements for the vapor systems and how to manage groundwater.





## 7. COMPARISON OF ALTERNATIVES

The comparison and evaluation of the remedial alternatives has been conducted using the five criteria listed below:

1. Risk reduction and effectiveness
2. Feasibility and ease of implementation
3. Cost effectiveness
4. Green remediation potential
5. Estimated time to reach "No Further Action"

A brief summary of these five criteria and a discussion as to how they pertain to the remedial alternatives is presented below.

### 7.1 DESCRIPTION OF EVALUATION CRITERIA

#### **Risk Reduction and Effectiveness**

Since the primary objective of any remedial action is to reduce or eliminate exposure of humans and the environment to COPCs, risk reduction and effectiveness is considered the primary threshold criterion. Alternatives must pass this criterion to be considered for implementation as the recommended alternative. It addresses whether or not a remedy provides adequate protection and describes how the risks posed by the Site are eliminated, reduced, or controlled. Protection of human health is assessed by evaluating how risk from each exposure route is eliminated, reduced, or controlled through each specific alternative. This criterion also addresses the ability of the alternative to achieve the cleanup goal and applicable guidelines. This criterion also evaluates the long term reliability of the alternative with respect to upkeep and the resilience of the alternative with respect to reasonably foreseeable changing climate conditions.

#### **Feasibility and Ease of Implementation**

This criterion analyzes technical feasibility and the availability of services and materials. Availability of services and materials evaluates the need for off-site treatment, storage, or disposal services and the availability of such services. Necessary equipment, specialists, and additional resources are also evaluated.

#### **Cost Effectiveness**

Cost information presented for the alternatives evaluates the estimated capital, operational and maintenance costs of each alternative. Capital costs include direct capital costs such as materials and equipment. Costs are presented as a balancing criterion such that if a number of remedial alternatives are comparable for the previously discussed criteria, cost may be used as a distinguishing factor in the selection of the remedial action. Estimated costs were developed based on prior project and contractor experience, and current estimates received from contractors. Remediation is scheduled to take place in 2018-2019, and as such, costs presented are in year 2018 dollars.



### **Green Remediation Potential**

This criterion evaluates the extent of green remediation techniques that can be employed as part of the project and their associated benefits relative to other alternatives. This criterion will be evaluated based on its consistency with EPA's *Principle for Greener Cleanup* policy.

### **Estimated Time to Reach "No Further Action"**

This criterion is defined as the time it will take to achieve "No Further Action" in accordance with Maine 38 M.R.S.A. 343-E, as well as to meet the requirements of the Maine DEP VRAP and receive a CoC from VRAP. Please note this criterion does not take into account redevelopment and other time for non-environmental tasks; however, certain alternatives better prepare the Site for redevelopment, and this will be considered as part of this criteria.

## **7.2 EVALUATION OF ALTERNATIVES**

### **Alternative #1 – No Action Alternative**

The "No Action" alternative involves no remediation of contaminated soil/fill or abatement of hazardous building materials and would not include a means for mitigating or eliminating potential exposure to contaminants both during and following redevelopment. Therefore, the potential for human exposure continues to exist for future residents, excavation/construction workers, patrons, and commercial workers. As such, the "No Action" response is not wholly protective of human health and the environment. Additionally, without action, the toxicity, mobility, and volume of contaminants will not be reduced. Therefore, this alternative is ineffective as a permanent remedial solution and does not pass the Risk Reduction threshold criteria. As a result, this alternative cannot be considered as a final alternative for the Site and will not be considered or discussed further.

### **Alternative #2 – Selective removal of PAH and metal contaminated soil/fill, installation of an engineered barrier and stabilization of lead paint (in Building 1-1) to accommodate design plans; and institutional controls**

#### *Risk Reduction and Effectiveness*

Once the PAH and metal contaminated soil/fill is selectively removed, remaining soil/fill onsite is covered with an engineered barrier, lead is stabilized in Building 1-1, and institutional controls and EMP have been implemented for the Site; the remedial action objective will have been attained and determination of success is easy to demonstrate. Selective removal, soil covering, stabilization, and institutional controls have been proven as an effective and reliable means of remediating exposure risk if properly maintained. The mobility and volume of contaminants will be reduced but not eliminated. This alternative is effective for the Site because the risk of exposure by potential receptors is significantly reduced.

Although the outer edges of the Site adjoined by the Fore River may be impacted by increased flooding in a changing climate, the Site is planned to be redesigned during development with a mixture of hardscapes and landscaping; therefore, there will be limited areas for erosion to occur, and those areas will be covered with at least 1 foot of clean fill. The primary area for erosion to



likely occur is around the peninsula perimeter and along the slope. These areas will be diligently inspected into the future in accordance with the EMP to ensure the engineered barrier's continued effectiveness. The proposed redevelopment will also be an improvement to current bare soil conditions in some areas of the Site. A subsurface stormwater retention and treatment system is also planned for installation in currently at least four locations to accommodate an increased stormwater load and minimize the potential for erosion. Additionally, any damage can be promptly repaired according to the EMP. Therefore, the engineered barrier system will be continually effective in a changing climate despite the need for potential minor cover system repair (demonstrated long term reliability and resiliency).

**This alternative reduces risk, and institutional controls make this alternative continually effective, even in a changing climate.**

#### *Feasibility and Ease of Implementation*

This remedial alternative utilizes standard excavation and construction techniques for excavation, soil removal, installation of the engineered barrier system, stabilization of lead paint, and long-term management and institutional controls. This alternative can be implemented in conjunction with redevelopment, which creates efficiencies and greater feasibility. **Therefore, this alternative is more feasible and easily implementable than Alternative #3.**

#### *Cost Effectiveness*

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Consulting and Engineering & Oversight	\$561k
Presumptive Remedies	\$152k*
Soil Management/Work	\$1,278k
Engineered Barrier System Installation:	\$2,845k
Stormwater system	\$1,309k
Lead Stabilization of Building 1-1	\$16,000
Completion Reporting & EMP/Deed Restriction	\$21,000
Long-Term Engineered Barrier Maintenance and Ventilation System Inspection**	\$71,300
10% Contingency	\$625k
<b>Total</b>	<b>\$6,878,300</b>

\*Variable considering unknowns associated with presumptive remedies.

\*\*\$1,500 cost per year (year 1) with 3% annual inflation over 30 years

Note: Budgeted costs associated with Area 2 and Area 4 doubled to account for unknown costs associated with Lots 4-5 and Lots 16-19, respectively.

#### *Green Remediation Potential*

This alternative requires limited offsite disposal of impacted soil resulting in fuel consumption and greenhouse gas emissions during transport, and limited volumes of soil to be disposed in a landfill; however, these quantities will be significantly less than Alternative #3. Soil requiring offsite disposal can also alternatively be recycled at more local aggregate recycling facilities in lieu of



landfill disposal. Backfill materials require trucking to the Site but can be sourced locally to reduce shipping distances.

This alternative also requires less offsite transport and disposal of lead paint removal waste and blasting grits than Alternative #3, due to less intensive removal.

Local contractors with green businesses practices (i.e., biofuel converted utility trucks, renewable/sustainable heating and electricity at their office/yard, etc.) can be given preference during the bidding process. To the extent feasible, the most local disposal facilities can be selected to limit the emissions from trucking wastes to offsite disposal locations. **Therefore, green remediation practices can be implemented with this alternative, and this alternative has greater potential for green remediation practices than Alternative #3.**

*Estimated Time to Reach "No Further Action"*

Immediately following receipt of disposal certificates, final inspection of the engineered barrier system and lead stabilization areas, and implementation of the institutional controls, the Site would meet the requirements for "No Further Action" and could attain a Certificate of Completion from the Maine DEP VRAP.

This alternative can be implemented in conjunction with redevelopment and allows development to be implemented and completed sooner.

**Using this alternative, "No Further Action" could be attained within four months of implementation and leaves the Site in a more readily usable position for redevelopment.**

**Alternative #3 – Completed removal and proper disposal of PAH and metal contaminated soil/fill and complete removal of lead paint (from Building 1-1); and institutional controls**

*Risk Reduction and Effectiveness*

Once the identified contaminated soil is removed from the Site, confirmatory sample results are verified, lead is entirely removed, and institutional controls and EMP have been implemented for the Site, the remedial action objective with respect to soil and lead paint will have been attained and determination of success is easy to demonstrate. Complete removal of contaminated soil and lead paint have been proven an effective means of eliminating exposure risk.

With no remaining impacted soil or lead paint, erosion and impacts from a changing climate (strong storms, flooding, etc.) would not impede the effectiveness of this Alternative (demonstrated long term reliability and resiliency). Additionally, removal of all lead paint would eliminate the potential for future release from the exterior of Building 1-1 if exterior conditions degrade in the future.

**This alternative reduces risk and institutional controls make this alternative continually effective since contamination removal is permanently effective in a changing climate.**



### *Feasibility and Ease of Implementation*

This remedial alternative for soil utilizes standard excavation and construction techniques for removal of impacted accessible soil, replacement with clean fill, and blasting and manual scraping of lead paint. Since all soil contamination is to be removed, no continued management or restrictions are necessary relative to the soil and lead paint. The complete extent of soil contamination is presumed to be Site-wide based on the location of the Site in a historically filled area and history of industrial operation at the Site and in the surrounding area. Complete removal of contaminated soil may be difficult and unknowns may be encountered at deeper interval where industrial debris may be encountered. Additionally, as urban fill was used to create entire portions of the existing peninsula, excavation may extend into the Fore River and require additional permitting and sediment management programs. This alternative for soil is feasible but much more difficult to implement due to unknowns.

Complete removal of lead paint in Building 1-1 would also be challenged due to the prolonged history of the building repeated painting of most components of the building with lead paint. Therefore, complete removal is much less feasible than as needed removal and stabilization to meet design requirements.

This remedial alternative also utilizes standard techniques for institutional controls. **Therefore, this alternative is feasible but not as easily implementable as Alternative #2.**

### *Cost Effectiveness*

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Consulting and Engineering	\$400k
Presumptive Remedies	\$152k*
Site Work	\$198k
Proper Disposal of Soil**	\$13,325k
Additional permitting and sedimentation controls	\$50k
Confirmatory sampling lab costs	\$7,500
Clean Fill**	\$4,100k
Lead paint removal	\$50k
Completion Reporting & EMP/Deed Restriction	\$21k
Long-Term Maintenance and Inspection of Ventilation System***	\$16,214
10% Contingency	\$3,226k
<b>Total</b>	<b>\$35,483,914</b>

\*Variable considering unknowns associated with presumptive remedies

\*\*Assumes approximately 205,000 cubic yards of soil, removal to average of 5 feet bgs across 25.23 acres

\*\*\*\$500 cost per year with 3% annual inflation over 30 years

### *Green Remediation Potential*

This alternative requires a significant amount of offsite disposal of contaminated soil and lead paint/blasting grit waste resulting in greater fuel consumption and greenhouse gas emissions



during transport, and greater volumes of material to be disposed in a landfill compared to Alternative #2. Soil requiring offsite disposal can also alternatively be recycled at more local aggregate recycling facilities in lieu of landfill disposal. It is possible to reduce the transportation impacts by using local contractors, local disposal facilities, and a local source of clean fill. Additionally, subcontractors with green business practices (i.e., biofuel converted utility trucks, renewable/sustainable heating and electricity at their office/yard, etc.) can be given precedence in the bidding process. **Therefore, this alternative has lower potential for green remediation practices than Alternative #2.**

*Estimated Time to Reach “No Further Action”*

Immediately following receipt of disposal certificate and implementation of the Institutional Controls, the Site would meet the requirements for “No Further Action” and could attain a CoC from the Maine DEP VRAP.

This alternative must occur well in advance of construction due to the time required to excavate and transport existing soil and replace with new fill; then allow for needed settlement of the newly placed soil prior to construction.

**Using this alternative, “No Further Action” could be attained within four months of implementation but cannot be as readily implemented during redevelopment as Alternative #2.**

**7.3 JUSTIFICATION FOR THE SELECTED REMEDIAL ALTERNATIVE**

The following table summarizes the comparison criteria and alternatives using a relative rank score. The top ranking score is based on the total number of alternatives presented as part of this ABCA (i.e., 3 alternatives), representing the best option for that comparison criteria:

Alternative	Reduced Risk & Effectiveness	Feasibility & Ease	Cost	Green Remediation Potential	Time	Total Score (max score 15)
#1 No Action	0	-	-	-	-	0
#2 Engineered Barrier	2	3	3	3	3	14
#3 Complete Removal	3	2	2	2	2	11

0 – indicates threshold criteria not met and alternative is not evaluated, would otherwise represent scores of 1



Based on the evaluation of the remedial alternatives presented above, the recommended alternative is:

- **Alternative #2 – Selective removal of PAH and metal contaminated soil/fill, installation of an engineered barrier and stabilization of lead paint (in Building 1-1) to accommodate design plans; and institutional controls**

This alternative was selected because it is effective at reducing the risk of exposure and remains effective in a changing climate assuming proper maintenance in accordance with an EMP; is feasible and easy to implement; has greater green remediation potential than Alternative #3; can be completed at a lower cost than Alternative #3; and can be implemented in a shorter time frame while better positioning the Site for redevelopment.





## 8. SUMMARY

Credeire was retained by Partners, Commons and Hoteliers to prepare this ABCA for Thompson's Point in the City of Portland, Maine. The purpose of this study was to evaluate potential remedial action alternatives to mitigate identified environmental conditions at the Site. Based on the findings of this study, a summary of the ABCA process is presented below:

1. Remedial action is necessary to address contaminated soil and fill materials across the Site; possible contaminated soil vapor on the Site; limited areas of impacted groundwater; and hazardous building materials. In consideration of the CSM, applicable regulatory guidelines, and the nature of the specific contaminants detected, Credeire evaluated three alternatives to identify the most appropriate cleanup. The three evaluated remedial alternatives were compared for risk reduction and effectiveness, feasibility and ease of implementation, cost effectiveness, green remediation potential, and estimated time to reach "No Further Action".
2. Based on the evaluation of the remedial alternatives presented herein, the recommended alternative for cleanup of the Site is Alternative #2 – Selective removal of PAH and metal contaminated soil/fill, installation of an engineered barrier and stabilization of lead paint (in Building 1-1) to accommodate design plans; and institutional controls.
3. This alternative was selected because it is effective at reducing the risk of exposure and remains effective in a changing climate assuming proper maintenance in accordance with the VRAP Work Plan; is feasible and easy to implement; has greater green remediation potential than Alternative #3; can be completed at a lower cost than Alternative #3; and can be implemented in a shorter time frame while better positioning the Site for redevelopment.
4. An updated VRAP Work Plan and associated Soil and Groundwater Management Plan (SGMP) that summarizes the execution of the remedial activities is included in this document as **Attachment B**.
5. Long-term risk posed by environmental conditions remaining at the Site following the completion of the above-described remedies will be managed through the filing of a DEC and long-term implementation of an EMP.




## FIGURES





DRAWN BY: MAK      DATE: 02/08/2017  
 CHECKED BY: ASD      PROJECT: 1101128


**Crede Associates, LLC**  
 776 MAIN STREET  
 WESTBROOK, MAINE  
 Tel. 207.828.1272  
 Fax 207.887.1051  
 WWW.CREDERELLC.COM



## FIGURE 1 SITE LOCATION PLAN

SUBDIVISION LOTS 4 - 13 AND 16 - 19  
THOMPSON'S POINT  
PORTLAND, MAINE

1,000      0      2,000



Feet

1 INCH = 2,000 FEET





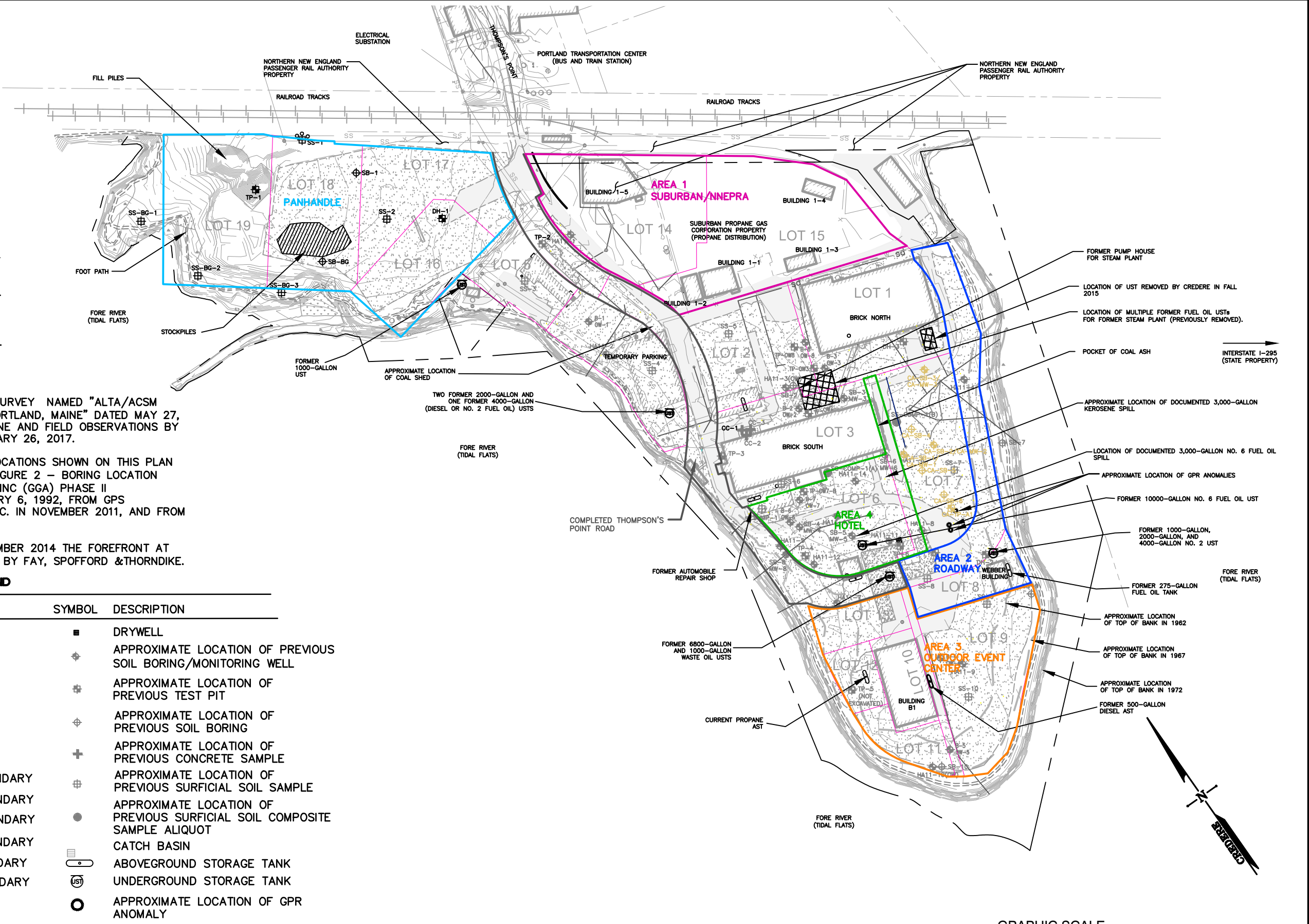
LOT ID	AREA (SF)	AREA (AC)
COMMON AREA	507,368	11.65
1	63,335	1.45
2	44,355	1.02
3	57,007	1.37
4	41,410	0.95
5	24,240	0.56
10	17,279	0.40
6	50,243	1.15
8	17,504	0.40
9	59,024	1.36
11	13,873	0.32
12	11,329	0.26
13	15,323	0.35
7	48,958	1.12
14	57,345	1.32
15	80,136	1.84
16	37,983	0.87
17	44,896	1.03
18	54,336	1.25
19	66,399	1.52
TOTAL	1,312,346	30.13

**NOTES:**

- INFORMATION ON THIS PLAN OBTAINED FROM A SURVEY NAMED "ALTA/ACSM LAND TITLE SURVEY OF 1 THOMPSON'S POINT, PORTLAND, MAINE" DATED MAY 27, 2011, BY SEBAGO TECHNICS OF WESTBROOK, MAINE AND FIELD OBSERVATIONS BY CREDERE ASSOCIATES, LLC PERSONNEL ON JANUARY 26, 2017.
- PREVIOUS SOIL BORING AND MONITORING WELL LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE BASED ON A PLAN NAMED "FIGURE 2 - BORING LOCATION PLAN" FROM GEMINI GEOTECHNICAL ASSOCIATES, INC (GGA) PHASE II ENVIRONMENTAL SITE ASSESSMENT DATED JANUARY 6, 1992, FROM GPS COORDINATES PROVIDED BY HALEY & ALDRICH INC. IN NOVEMBER 2011, AND FROM CREDERE'S JULY 11, 2012, PHASE II ESA.
- SUBDIVISIONS SHOWN ARE BASED ON THE SEPTEMBER 2014 THE FOREFRONT AT THOMPSON'S POINT SUBDIVISION PLAN PREPARED BY FAY, SPOFFORD & THORNDIKE.

**LEGEND**

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PROPERTY LINE		DRYWELL
	ABUTTER PROPERTY LINE		APPROXIMATE LOCATION OF PREVIOUS SOIL BORING/MONITORING WELL
	FORMER TOP OF BANK LINE		APPROXIMATE LOCATION OF PREVIOUS TEST PIT
	EDGE OF PAVEMENT		APPROXIMATE LOCATION OF PREVIOUS SOIL BORING
	EDGE OF GRAVEL		APPROXIMATE LOCATION OF PREVIOUS CONCRETE SAMPLE
	EXISTING BUILDING		APPROXIMATE LOCATION OF PREVIOUS SURFICIAL SOIL SAMPLE
	FORMER BUILDING		APPROXIMATE LOCATION OF PREVIOUS SURFICIAL SOIL COMPOSITE SAMPLE ALIQUOT
	RAILROAD TRACK		CATCH BASIN
	APPROX. SITE AREA 1 BOUNDARY		ABOVEGROUND STORAGE TANK
	APPROX. SITE AREA 2 BOUNDARY		UNDERGROUND STORAGE TANK
	APPROX. SITE AREA 3 BOUNDARY		APPROXIMATE LOCATION OF GPR ANOMALY
	APPROX. SITE AREA 4 BOUNDARY		
	APPROX. PANHANDLE BOUNDARY		
	APPROX. SUBDIVISION BOUNDARY		
	EXISTING STORM DRAIN		



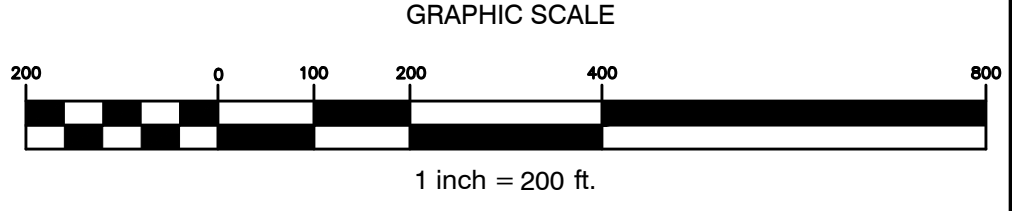
**Community Economy Environment**

**CREDERE ASSOCIATES, LLC**  
 776 MAIN STREET  
 WESTBROOK, MAINE 04092  
 TEL: 207.828.1272  
 FAX: 207.887.1051  
 WWW.CREDERELLC.COM

DATE: 4/2/2018
PROJECT # 17001387
DRAWN BY: SAF
CHECKED BY: ASD

**FIGURE 2**  
**DETAILED SITE PLAN**

**THOMPSON'S POINT**  
**PORTLAND, MAINE**



J:\CREDERE\11001128 - Thompson's Point\2018 - AEC\A.dwg - plot - 4/24/2018 9:44 AM

**APPENDIX A**  
**Maine DEP VRAP NAAL**





STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE  
GOVERNOR

PAUL MERCER  
COMMISSIONER

January 11, 2018

Christopher Thompson  
Forefront Partners I, LP  
501 Danforth Street  
Portland, ME 04101

Re: Thompson's Point, Portland: Revised Voluntary Response Action  
No Action Assurance Letter-Revised January 11, 2018\*

Dear Mr. Thompson:

At your request, the Maine Department of Environmental Protection (MEDEP) is issuing this revised No Action Assurance (NAA) letter for Thompson's Point in Portland, Maine. This letter amends the original NAA letter issued by the Department on March 6, 2013.

The MEDEP has received and reviewed an application submitted in June 2012, by your environmental consultant Credere Associates, LLC (Credere) to the Department's Voluntary Response Action Program (VRAP) for the Thompson's Point property located at 1 Thompson's Point in Portland, Maine. The following reports were compiled for this site as part of the Greater Portland Council of Government's (GPCOG) Brownfields Program and were reviewed along with this application: A Phase One Environmental Site Assessment (ESA) for the Thompson's Point property prepared by Credere, dated December 5, 2011, a Phase II ESA for Thompson's Point, prepared by Credere dated July 11, 2012, as well as a Voluntary Response Action Program Work Plan, Revision 2 dated February 27, 2013 (Work Plan). Additional documentation submitted to MDEP previously for review included two Phase I ESAs prepared by Gemini Geotechnical Associates (GGA) dated February 6, 1991 and May 16, 2006, a December 15, 1998 Test Pit Investigation report prepared by GGA, and a February 26, 1999 No Further Action Assurance Letter issued by MEDEP VRAP to a previous applicant. The current application was submitted to the Department with the request that the site participate in the VRAP and that Forefront Partners I, LP (Forefront Partners), as the applicant to the VRAP, receive the protections provided by the VRAP Law.

AUGUSTA  
17 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0017  
(207) 287-7688 FAX: (207) 287-7826  
RAY BLDG., HOSPITAL ST.

BANGOR  
106 HOGAN ROAD, SUITE 6  
BANGOR, MAINE 04401  
(207) 941-4570 FAX: (207) 941-4584

PORTLAND  
312 CANCO ROAD  
PORTLAND, MAINE 04103  
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE  
1235 CENTRAL DRIVE, SKYWAY PARK  
PRESQUE ISLE, MAINE 04679-2094  
(207) 764-0477 FAX: (207) 760-3143

The Thompson's Point Property (the Site) is composed of five City of Portland tax map lots (Map 20 1 Lots A-5, A-8, and A-10, and Map 202 Lots A-1 and A-4) totaling approximately 27.5 acres located on a peninsula along the Fore River in Portland. Land use in the area is currently primarily commercial. The site has been used historically for the following activities: a train car maintenance yard, automobile repair facilities, utility distributors (natural gas and propane), building supply retailers, metal working, concrete block manufacturing, bombshell casing manufacturing (ordinance plant), textile manufacturing, various construction contractor offices, paperboard production, trailer storage, trucking facilities, and warehousing. The Credere Phase ESA identified the past commercial/industrial use of the property as an environmental concern and identified eight specific Recognized Environmental Concerns for further Phase II investigation. The Phase II investigation concluded that there is soil and groundwater contaminated with petroleum and hazardous substances, and that other universal and special wastes are located on the site, including building materials.

Based on the information presented in the above listed reports, the Department agrees with the following recommended actions as proposed in the Work Plan:

1. Known and/or potentially contaminated soils that are disturbed during redevelopment of the site will be managed according to the Work Plan and associated December 12, 2012 Soil Management Plan (SMP) and/or subsequent Department approved revisions.\* Contaminated soils that are within 12 inches of the developed ground surface or removed and replaced onsite will be covered with a marker layer and a minimum of 12 inches of clean fill, and/or 6 inches of clean sand and gravel over the contaminated soil and at least 3 inches of asphalt/concrete or brick. If excess contaminated soil is generated that cannot be re-used onsite, the material will be disposed offsite at an appropriate facility as special waste.
2. Known and/or potentially contaminated groundwater that is encountered during site redevelopment work will be managed in accordance with the Work Plan and associated December 12, 2012 Groundwater Management Plan and/or subsequent Department approved revisions.\*
3. Universal, special, and hazardous waste will be properly managed and removed from the site and disposed at an appropriate facility.
4. PCB containing building materials will be characterized and managed in an appropriate manner and in accordance with the applicable provisions of the Toxic Substances Control Act 40 CFR 761 et seq. Plans for such characterization and management shall be submitted concurrently to USEPA Region 1 and the Department for review and approval.



5. Asbestos abatement and/or management activities in onsite buildings will be conducted in accordance with all applicable State and Federal rules and regulations.
6. Lead based paint abatement/management issues shall be conducted as discussed in the Work Plan and in accordance with all applicable state and federal regulations.
7. A soil screening program will be conducted after the demolition of the site buildings and removal of the concrete slabs as discussed in the Work Plan. Activities that will be completed based on the results of the screening program are discussed in the Work Plan and/or in subsequent Department approved revisions.\*
8. A deed restriction will be recorded at the Cumberland County Registry of Deeds that:
  - 1) Prohibits excavation/disturbance of soils onsite without notification of the Department, and references the existence of an Environmental Management Plan that will be developed for the site and submitted for approval by the Department prior to deed restriction recording.
  - 2) Prohibits withdrawal of groundwater without notification of the Department, and references the existence of an Environmental Management Plan that will be developed for the site and submitted for approval by the Department prior to deed restriction recording.

These restrictions will be placed as Declaration of Environmental Covenants consistent with this letter and in a manner that is acceptable to the Department.

Provided that the actions described above are completed to the satisfaction of the Department, Forefront Partners I, LP and its successors and/or assigns, as well as those persons identified in 38 M.R.S.A. § 343-E (6), will be granted the liability protection provided by 38 M.R.S.A. § 343- E(1) for the property located at 1 Thompson's Point, in Portland, Maine identified as Map 201 Lots A-5, A-8, and A- 10, and Map 202 Lots A-1 and A-4. The Department will take no action against Forefront Partners I, LP, its successors and assigns, and all those persons identified in 38 M.R.S.A. § 343-E (6).

Once the proposed and recommended remedial measures at the property have been implemented to the satisfaction of the Department, a report demonstrating the successful completion of the tasks must be forwarded to the VRAP. A report may be submitted when all of the remedial activities have been completed for the entire property or in stages as portions of the property are remediated and ready for redevelopment. Upon determining successful conclusion of the remedial tasks, the Department will issue a Commissioner's Certificate(s) of Completion to Forefront Partners I, LP for those portions of the property where remedial activities have been completed.

If you have any questions, please call me at 207-446-2564.

Sincerely,

A handwritten signature in blue ink that reads "Becky Blais". The signature is written in a cursive style and is centered within a light gray rectangular box.

Becky Blais  
Maine Department of Environmental Protection  
Voluntary Response Action Program

cc: Nick Hodgkins--MEDEP  
Allison Drouin, Credere  
David L. Galgay, Jr-Verrill Dana, LLP.

**APPENDIX B**  
**VRAP Work Plan**





# CREDERE ASSOCIATES, LLC

776 Main Street  
Westbrook, Maine 04092  
Phone: 207-828-1272  
Fax: 207-887-1051

April 18, 2018

Ms. Becky Blais  
Maine Department of Environmental Protection  
Bureau of Remediation and Waste Management  
Division of Remediation  
Voluntary Response Action Program  
17 State House Station  
Augusta, Maine 04333-0017

**Subject: Voluntary Response Action Program Work Plan  
Thompson's Point, Portland, Maine**

Dear Ms. Blais:

On behalf of Forefront Partners I, LP (Partners), Forefront Commons I, LLC (Commons), and Forefront Hoteliers, LLC (Hotelier); Credere Associates, LLC (Credere) has prepared this Voluntary Response Action Program (VRAP) Work Plan (Work Plan) for the property located at Thompson's Point in Portland, Maine (Site). The current owner of the Site is Forefront, who intends to develop the Site for mixed use residential and commercial and hospitality development.

Credere submitted a completed VRAP Application for Technical Assistance to the Maine Department of Environmental Protection (DEP) on June 13, 2012. A No Action Assurance Letter (NAAL) was issued for the larger Thompson's Point property on March 6, 2013, with an associated former VRAP Work Plan dated February 27, 2013, with associated soil and groundwater management specifications. The NAAL was recently amended on January 11, 2018, to reflect the change to the proposed uses of the Site (i.e., to include limited residential) and more accurately reflect the remediation plan associated with the current redevelopment plans (e.g., the more specific scope of the building material remediation). As Lots 1 through 3 have previously been remediated and issued VRAP Certificates of Completion (CoCs) and since Lot 7 has an independent Work Plan via a separate entity/owner, this Work Plan will apply only to future planned remediation of Lots 4 through 6 and 8 through 19. This Work Plan is an update to the prior work plan considering this changed use and provides the means of assuring the following:

- Soil and fill at the Site will be properly managed, characterized for offsite disposal as special waste at a licensed facility, if needed, and/or covered with an engineered barrier system to prevent exposure to respective occupants across the Site.
- Possible soil vapor (including possible radon) will be mitigated through installation of a sub-slab ventilation system as a best management practice.

- Hazardous building materials in the Site buildings will be properly managed according to State and Federal regulations.
- Exposure to contamination to remain at the Site be prevented through implementation of institutional controls.

A July 2012 Phase II ESA by Credere completed for the Site identified polycyclic aromatic hydrocarbons (PAHs) and metals contamination in surface and subsurface soil at the Site. PAHs and metals are likely attributed to the historical use of the Site for commercial and industrial uses, as well as the period during the 1960s and 1970s when the Site was filled to expand the usable area of the peninsula. Due to the heterogeneous nature of these types of urban fills, PAHs and arsenic are considered contaminants of potential concern (COPCs) for fill soils across the entire Site.

During the 2012 Phase II ESA, extractable petroleum hydrocarbons (EPH) petroleum fractions and volatile organic compounds (VOCs) were detected in two groundwater monitoring wells above Maine DEP Petroleum Guidelines. EPH and VOC compounds are likely associated with a petroleum release from one or more former underground storage tanks (USTs) at the Site or minor releases during the historical industrial use of the Site. As each former UST location has not been directly assessed, there is also the potential of additional locations of EPH and VOC contamination to be present throughout the Site. The groundwater at the Site is relatively shallow (approximately 6 to 10 feet below ground surface [bgs]) and may contribute to vapor intrusion potential into future Site buildings.

Additionally, asbestos-containing materials (ACMs), lead paint, and polychlorinated biphenyl (PCB)-containing paints were identified in/on the Site buildings. For purposes of reference throughout this document the buildings will be referred to as Buildings 1-1 through 1-5 located on Lots 14 and 15 and the Webber Building located on Lot 8.

Based on the proposed redevelopment of the Site for mixed use residential and commercial (retail, office, and hospitality) development, potential receptors at the Site include construction/excavation workers during construction of the new Site building(s) and utility work, employees, patrons of the commercial businesses, and residents. Based on these receptors, the expected exposure pathways to COPCs include:

- Possible inhalation of vapors in open excavations or via vapor intrusion into future Site building(s)
- Active ingestion by construction workers using poor hygiene practices during construction or by children
- Dermal absorption through direct contact with impacted soil by construction workers, patrons, commercial works, or residents
- Incidental uptake of impacted soil in the form of dust by patrons, commercial workers, and construction workers



The following sections present the cleanup approach to address these COPCs and associated exposure pathways during redevelopment.

### **Soil Management**

Soil management will be conducted in accordance with the attached Soil and Groundwater Management Plan (SGMP; see **Attachment A**), which outlines health and safety, soil handling, soil disposal, and transportation details through the end of construction.

As part of the Site redevelopment, the relocation of impacted soil throughout the Site will be conducted in certain areas to meet the proposed finish grades of the project. Every effort will be made to relocate soil onsite.

Excess soil requiring offsite disposal would meet the definition of a "special waste" as presented in the Maine DEP's Maine Solid Waste Management Rules: Chapter 400 upon removal from the Site. The stockpiles on Lots 18 and 19 have been sampled for waste characterization and based on those results would not be considered hazardous waste if required to be removed from the Site. Soil in other areas of the Site has not been assessed for hazardous waste characterization at this time. Additional waste characterization of excess soil will be completed in accordance with the Attached SGMP and with an associated Site-Specific Quality Assurance Project Plan (SSQAPP) if completed using Brownfields funding. The waste profile and facility acceptance will be submitted to the Maine DEP VRAP prior to soil removal. Offsite disposal will be conducted in accordance with the SGMP included as **Attachment A**.

The remaining impacted soil will be left in place and will be covered with an engineered barrier system to limit exposure to the soil through direct contact. The engineered barrier system will consist of hardscape include the impermeable Site building foundation, areas of concrete walkways, and parking lots; or landscaping that will consist of a marker layer and 1 foot of documented clean fill material beneath the landscaping or 2 feet of clean fill above the marker layer in areas designed specifically for child outdoor play that are not well-established grass or hardscape (e.g., mulched or tire chipped play areas that would permit digging), if any. Specific details for the engineered barrier system are included in the SGMP.

Following the completion of special waste soil removal and disposal activities, if needed, and the construction of the engineered barrier system over remaining impacted soil, a summary of completed actions and the applicable disposal documentation will be submitted to the Maine DEP. The engineered barrier system will be maintained and inspected annually in accordance with an Environmental Management Plan (EMP) to be submitted for review and approval with the Remediation Summary Report at the completion of the project. The EMP will outline post construction soil management requirements, ongoing maintenance and inspection, and address frequently asked questions for future use of the Site.

#### *Presumptive Remedy for Petroleum-Saturated Soil Removal*

No known petroleum-saturated soil has previously been encountered at the Site. If petroleum saturated soil is encountered and removal is required, Maine DEP will be notified within 2 hours



of discovery. The excavation area will be stabilized and waste characterization samples will be collected as the petroleum will likely be weathered and comingled with urban fill and would not qualify for virgin petroleum status. Waste characterization will be collected in accordance with the attached SGMP, and a waste profile will be submitted to a licensed disposal facility for acceptance. Upon acceptance, petroleum saturated soil will be removed in accordance with the SGMP.

Confirmatory screening will be conducted in accordance with Appendix P and Q of Chapter 691 and will be overseen by a Maine Certified Geologist. Soil will be field screened in accordance with the *Compendium of Field Testing of Soil Samples for Gasoline and Fuel Oil*, dated October 15, 2012, using a Thermo 580B OVM photoionization detector (PID; or similar) calibrated with 100 parts per million by volume (ppm<sub>v</sub>) isobutylene gas standard and an instrument response factor of 1.0. Soil (200 grams) will be placed in a metalized polyethylene bag and screened with the PID. Additionally, oleophilic dye tests will be used to identify possible fuel oil releases. The water/soil shake test will be used to ensure petroleum saturated soil, if encountered, has been adequately removed.

Once the petroleum-saturated soil excavation extent has been determined, field screening samples will be collected in triplicate from the north, east, south, and west sidewalls and from the base of the excavation. Confirmatory soil laboratory samples to satisfy the requirements of the closure assessment will be collected from the final extent of the petroleum-saturated soil excavation. If these samples are needed, methodology and analytical details will be approved in a SSQAPP or other DEP approved plan if not completed using Brownfields funds.

### **Presumptive Remedy for Vapor Intrusion**

As the Site is currently undeveloped, a vapor pathway has not been assessed per Section 6.4 of the Maine DEP Petroleum Guidelines. A sub-slab ventilation system and a vapor barrier will be installed beneath the foundation of newly constructed buildings as a best management practice to prevent any possible vapor that may build up beneath the Site building(s) from migrating to indoor air. This precautionary measure will assure possible volatiles from releases from the USTs or other surrounding property impacts will not impact indoor air. This ventilation system can also be used to mitigate radon gas, if needed.

The ventilation system will consist of perforated piping installed in a gravel bed beneath the foundation that will ventilate via a vertical vent above the roofline. The vapor barrier will consist of impermeable polyethylene sheeting or similar to line the foundation and further prevent vapor migration.

### **Lead Paint and PCB-Containing Paint**

Lead paint PCB-containing building materials were identified at the Site during previous environmental investigations. Buildings 1-2 through 1-5 and the Webber building are planned for demolition. Building debris will be appropriately characterized and/or segregated for disposal at a construction and demolition (C&D) debris landfill or as special waste. Materials coated with paint containing PCBs will generally all be disposed as Special Waste; however, some lead paint





only coated materials may still be suitable for disposal at a C&D landfill after proper waste stream characterization.

Waste characterization methodology and required analyses will be summarized in an SSQAPP or other DEP approved work plan if not completed with Brownfields funding.

Building 1-1 is planned to be renovated for office or retail use. Renovation demolition debris will be handled similarly to above; however, lead paint of the shell components of the building (e.g., original wood floors, stairs, brick walls, etc.) will be blasted as needed to meet the design aesthetic of the building plans. Paint blasting will occur according to OSHA's Lead in Construction standard work practices and proper worker health and safety practices will be implemented. As the building is not planned for residential use, no clearance work according to Maine DEP Chapter 424 is required; however, the following best management practices will be used to minimize the spread of lead and possible PCB-containing dust within the Site building:

1. Blasting should occur after interior demolition but prior to installation of any new materials to prevent contaminating new materials.
2. Dry vacuuming with a HEPA filter vacuum should occur within the blasting area after completion of blasting.
3. Visual inspection by a health and safety professional should be performed prior to beginning subsequent phases of construction to limit exposure to subsequent contractor due to poor cleaning practices.

Lead paint and blast grit will be characterized by lead toxicity characteristics leaching procedure (TCLP) and disposed as special waste. If TCLP results exceed 5 micrograms per liter ( $\mu\text{g/L}$ ), the material will require disposal as hazardous waste.

Ongoing maintenance of any remaining lead paint will be included in the Environmental Management Plan (EMP) to be submitted for review and approval with the Remediation Summary Report.

### **Presumptive Asbestos Abatement**

ACM located at the Site was described in prior environmental reports. Consistent with those findings, a Maine DEP-licensed asbestos abatement contractor will remove and dispose of regulated ACM pursuant to the requirements of Maine DEP Chapter 425: Asbestos Management Rules (including clearance sampling, when appropriate). It is expected that asbestos abatement activities will be conducted prior to or concurrent with building demolition or renovation. Third party asbestos clearances will be completed by the owners Qualified Environmental Professional (QEP).

Following the completion of asbestos abatement activities, the removal and disposal documentation require by Maine DEP Chapter 425: Asbestos Management Rules will be submitted to Maine DEP and EPA.



### **Presumptive Remedy for Universal and Other Regulated Hazardous Waste**

Universal and other regulated hazardous wastes have been identified at the Site. Consistent with the results of prior surveys, identified universal and other regulated hazardous waste will be removed from the Site and properly disposed in accordance with the applicable provisions of the Maine DEP Hazardous Waste Management Rules (Chapters 850 through 857).

Following the completion of universal and hazardous waste removal and disposal activities, a summary of completed actions and the applicable disposal documentation will be submitted to Maine DEP and EPA.

### **Groundwater Management**

No remediation of groundwater is planned as there is no known exposure to groundwater at the Site. However, limited areas of groundwater contamination have been documented for the Site and groundwater will be managed according to the attached SGMP. The primary mechanism for prevent exposure to potentially contaminated groundwater is via the vapor barrier and sub-slab ventilation system described in the respective above section.

### **Institutional Controls**


Following completion of the soil cover system and redevelopment of the Site, a Declaration of Environmental Covenant (DEC) will be filed prohibiting extraction of groundwater. The DEC will also include details regarding the requirements for maintenance of the engineered barrier and sub-slab ventilation system and maintenance of any remaining lead paint in Building 1-1 in accordance with the EMP.

### **Closing**

We hope the information included in this Work Plan meets the requirements of the January 11, 2018 NAAL and to ensure liability protection for Partners, Commons, and Hoteliers; their successors, assigns, lenders, and fiduciaries as provided by the VRAP.

If any questions or concerns arise during your review of this submittal, please do not hesitate to contact the undersigned at (207) 828-1272 extension 15 or [adrouin@crederellc.com](mailto:adrouin@crederellc.com).

Sincerely,  
Creder Associates, LLC

  
Allison Drouin, PG, CG  
Project Geologist



Robert I. Patten, P.E., L.S.P., LEED-AP  
Vice President

cc: Chris Thompson, Forefront Partners I, LP  
Jeb Troub, Forefront Partners I, LP  
Bo Kennedy, Placemaker Partners, LLC

Attachment A – Soil and Groundwater Management Plan



**Attachment A**  
**Soil and Groundwater Management Plan**





April 18, 2018

Mr. Chris Thompsons  
Forefront Partners I, LP  
Forefront Commons I, LLC  
Forefront Hoteliers, LLC  
501 Danforth Street  
Portland, Maine

**Subject: Soil and Groundwater Management Plan  
Thompson's Point, Portland, Maine**

Dear Mr. Thompson:

The following Soil and Groundwater Management Plan (SGMP) describes methods and procedures to be used during remediation activities at Thompson's Point in Portland, Maine (Site). The activities and practices described below will be implemented in conjunction with the associated Maine Department of Environmental Protection (DEP) Voluntary Response Action Program (VRAP) Work Plan and are necessary to fulfill the applicable regulatory requirements and to manage potential risk to human and environmental receptors associated with contaminated soil and groundwater. Included in this SGMP are:

- A description of soil conditions and associated regulatory applicability
- A listing of proper health and safety work practices and protective equipment for use during Site work activities
- A description of onsite soil management procedures including soil handling, stockpiling, and dust control for use during Site work activities
- A description of the onsite soil reuse procedures including the soil engineered barrier system
- A summary of the methods to be used for the proper transport and disposal of excess soil that may be generated during redevelopment
- A basic summary of procedures for management groundwater if encountered during construction activities

## **1. INTRODUCTION AND APPLICABILITY**

The Site comprises 22.07 acres of the 30.13-acre Thompson's Point and consists of 15 lots (Lots 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, and 19). For purposes of redevelopment, the lots have been broken into sub-groups, which are described below:

- **Area 1 – Suburban Propane/Northern New England Passenger Rail Authority (NNEPRA)** comprises Lots 14 and 15 that total 3.16 acres. Lot 14 is currently developed with a warehouse building (Building 1-5 or the NNEPRA building) and Lot 15 is developed with a brick office building (Building 1-1), a red vacant former office building (Building 1-2), a maintenance building (Building 1-3) and a loading dock storage building (Building 1-4)<sup>1</sup>. All buildings with the exception of Building 1-1 are planned for demolition.
- **Area 2 – East Loop Road** comprises Lot 8 and a length of roadway within the 'common area'. The only Site building is a 1,790-square foot concrete block structure on Lot 8 (Webber Building) that is used as a backstage area when concerts take place. Currently the building is used for storage.
- **Area 3 – Outdoor Event Center** comprises Lots 9 through 13 and totals 3.09 acres. This area is developed with a roof structure that was formerly referred to as the Barnstormer building. This area is currently used for winter activities including the Rink at Thompson's Point with an overhead roof structure, a warming yurt on Lot 12, and material storage on Lots 11 through 13. During the summer months, these lots are used as a concert venue. This area has been operating with a temporary soil cover system that requires more permanent installation to support long term continued use as an event center.
- **Area 4 – Hotel** comprises Lot 6 and totals 1.15 acres and is currently used as an unpaved parking lot for the winter activity area and the adjoining Brick South building (Lot 3).
- Lots 4 and 5 comprise 1.51 acres and are currently used as unpaved parking lots. The lots are also used for minor material storage and stockpiling.
- The Panhandle comprises Lots 16 through 19 totaling 4.67 acres and is currently used for parking in the southeast corner of Lot 17 and otherwise used for stockpiling of soil. Access to these lots is gated. Grubbing and tree clearing occurred on Lot 19 in 2017 with stabilization of the slope with an engineered barrier. As the remainder of this lot has not been remediated, no closure reporting has been completed.

Additional acreage is made up of common area including driveways, stabilized perimeter slopes, and the intertidal zone to the low water mark.

Lots not covered by this SGMP include Lots 1 (Brick North), Lot 2 (Parking Lot), and Lot 3 (Brick South), which were previously redeveloped and have received VRAP Certificates of Completion (CoCs) from Maine DEP with associated Environmental Management Plans (EMPs) to outline continued work at these lots; Lot 7, which is being redeveloped simultaneously by a separate unrelated entity that is completing cleanup and preparing their own SGMP specific to that project; and a portion of the 'common area' roadway onto the peninsula, which has also been permanently redeveloped but has yet to be reported and receive a COC, an EMP will also be prepared to cover this remaining area.

**Figure 1** shows the location of the Site in Portland, and **Figure 2** shows pertinent Site features.

<sup>1</sup> For consistency, building numbers correspond to numbers used in TRC's *Limited Investigative Survey Report for Asbestos and Other Regulated Materials* for Lot 14 and 15 dated November 28, 2016. Nomenclature is 1, for Area 1, followed by the building number from TRC's report (i.e., -1, -2, -3, -4, and -5).



The Site was developed with railroad operations as early as 1885 and the majority of the Site was covered with railroad sidings. At the time the peninsula was smaller and did not extend as far south into the Fore River. The northwest portion of the Site was developed with the Thompson Fowler Hog Slaughter House. By 1909, railroad operations had transitioned to the Maine Central Railroad, and Lot 4 was developed with a blacksmith shop that had a large coal shed to its north. By 1938, use of Thompson's Point was transitioning from railroad to various commercial and industrial uses. The U.S. Government occupied Thompson's Point around 1949 for use as an Ordnance Plant; however, specific buildings associated with this use are not known.

Some minor filling of the western side of the peninsula occurred prior to construction of a private garage in the 1940s on Lot 6. In approximately 1955, a concrete product manufacturing building was constructed between Lots 6, 8, and 13, and a baseball field was present on Lots 16 through 19. Additionally, during the 1950s, fill continued to be added to the western and southern sides of the peninsula, an office building was constructed on Lot 5, and the current Site building on Lot 8 was constructed. By 1970, the building on Lot 10 was constructed.

Various commercial and industrial businesses rotated through the onsite buildings through the 1960s and 1970s, and by 1986, the concrete products manufacturing building was removed. Through 2013, the Site was used for abundant material storage and container storage associated with commercial and industrial occupants of the Site at the time. By 2014, former Site buildings had been removed leaving only the current Site building on Lot 8 and the roof structure on Lot 10. In 2015 the southern portion of the Site was redeveloped as a concert venue with an open lawn space on Lots 8 and 9, and as a winter activities area.

A July 2012 Phase II ESA by Credere completed for the Site identified polycyclic aromatic hydrocarbons (PAHs) and metals contamination in surface and subsurface soil at the Site. PAHs and metals are likely attributed to the historical use of the Site for commercial and industrial uses, as well as the period during the 1960s and 1970s when the Site was filled to expand the usable area of the peninsula. Due to the heterogeneous nature of these types of urban fills, PAHs and arsenic are considered contaminants of potential concern (COPCs) for fill soils across the entire Site.

During the 2012 Phase II ESA, extractable petroleum hydrocarbons (EPH) petroleum fractions and volatile organic compounds (VOCs) were detected in two groundwater monitoring wells above Maine DEP Petroleum Guidelines. EPH and VOC compounds are likely associated with a petroleum release from one or more former underground storage tanks (USTs) at the Site or minor releases during the historical industrial use of the Site. As each former UST location has not been directly assessed, there is also the potential of additional locations of EPH and VOC contamination to be present throughout the Site. The groundwater at the Site is relatively shallow (approximately 6 to 10 feet below ground surface [bgs]) and may contribute to vapor intrusion potential into future Site buildings.

Additionally, asbestos-containing materials (ACMs), lead paint and polychlorinated biphenyl (PCB)-containing paints were identified in/on the Site buildings. For purposes of reference



throughout this document the buildings will be referred to as Buildings 1-1 through 1-5 located on Lots 14 and 15 and the Webber Building located on Lot 8.

Based on the proposed redevelopment of the Site for mixed use residential and commercial (retail, office, and hospitality) development, potential receptors at the Site include construction/excavation workers during construction of the new Site building(s) and utility work, employees and patrons of the commercial businesses, and residents. Based on these receptors, the expected exposure pathways to COPCs include:

- Possible inhalation of vapors in open excavations or via vapor intrusion into future Site building(s);
- Active ingestion by construction workers using poor hygiene practices during construction or by children;
- Dermal absorption through direct contact with impacted soil by construction workers, patrons, commercial works, or residents; and,
- Incidental uptake of impacted soil in the form of dust by patrons, commercial workers, and construction workers.

## **2. GENERAL HEALTH AND SAFETY PLAN DURING SOIL EXCAVATION AND HANDLING**

The following serves as guidelines for health and safety procedures to be employed during general construction activities at the Site involving exposure to impacted soil. It is the responsibility of each individual contractor to develop and implement their own health and safety plan specific to the work to be performed.

Based on previous investigations at the Site and larger Thompson's Point property, the following COPCs were identified in soil and/or groundwater for the Site:

- PAHs in soil
- Metals in soil
- EPH in groundwater
- VOCs in groundwater

As this SGMP is only applicable through completion of construction at the Site, potential receptors include construction/excavation workers, utility workers, and environmental contractors during cleanup and redevelopment. Based on these receptors, the expected exposure pathways to COPCs include:

- Possible inhalation of vapors in open excavations if EPH/VOC contamination is identified associated with former USTs or where groundwater is present in excavation
- Active ingestion by construction workers using poor hygiene practices during construction
- Dermal absorption through direct contact with impacted soil





- Incidental uptake of impacted soil in the form of dust

As such, the utilization of basic personal protective equipment (PPE) and periodic monitoring will minimize the potential for human exposure while conducting remediation/redevelopment activities at the Site.

### **Training**

All personnel who will be directly handling or otherwise may be exposed to impacted soil shall have 40 hour Occupational Safety & Health Administration (OSHA) CFR 1910.120 training, 3 days of supervised field experience, and current 8-hour OSHA refresher training.

### **Personal Protective Equipment**

Based on the hazard evaluation, Level D PPE has been initially designated for all personnel who will be directly handling or otherwise may be exposed to impacted soil at the Site. The contractor's Health and Safety Officer may upgrade PPE to Level C or higher if additional hazards are identified during Site work.

Specific Level D PPE to be used at the Site includes the following:

- Steel toe work boots with latex over boots as required
- Safety glasses with side shields
- Work gloves
- Nitrile inner gloves
- Hard hat
- Coveralls (optional)

### **Work Zone Monitoring**

Considering the urban nature of the project, the property boundaries should be monitored for ambient dust levels to ensure fugitive dust is not migrating from the Site onto adjoining or nearby properties. As a general rule of thumb, visible ambient dust should be controlled using wet suppressant methods and any stockpiles should be covered during down time. Access should be limited to applicable personnel during periods when impacted soil is exposed at the surface.

Due to the potential for impacts to ambient air during construction, the work zone should be monitored periodically using a photoionization detector (PID), particularly when petroleum impacted soil and/or groundwater is exposed or disturbed. Ambient air should not exceed 10 parts per million by volume (ppmv) sustained for a 15 minute period.

### **General Operating Procedures**

In addition to the above basic health and safety guidelines, the following procedures should be followed during activities conducted at the Site which create the potential for exposure to impacted soil:



- Work involving excavation or management of impacted soil conducted at the Site shall be directed by a Qualified Environmental Professional (QEP).
- The Site shall be surveyed and cleared by DigSafe.
- All equipment used during excavation activities shall be properly cleaned and decontaminated prior to leaving the Site.
- Any indication of conditions more hazardous than those anticipated, or the observation of circumstances that would render the above basic health and safety procedures inappropriate, shall result in the evacuation of the work area and a reassessment of health and safety procedures by a QEP.

### 3. SOIL MANAGEMENT

The following section provides procedures for the excavation, re-use, storage, and disposal of excess soil or petroleum saturated soil generated during redevelopment activities at the Site.

#### **Soil Stockpiling and Storage**

Soil relocation is planned in conjunction with installation of the new Site buildings. Petroleum saturated soil may also require removal. Additionally, removal of soil may be necessary for other construction, or utility work at the Site. Impacted soil excavated from the Site may be temporarily stored and removed following waste disposal characterization and acceptance at an appropriately licensed receiving facility. Soil removed from the Site should be placed atop a minimum of 6-mil polyethylene sheeting to prevent contamination of surrounding cover materials and securely covered by a minimum 6-mil polyethylene sheeting. Berms shall be constructed around the edges of the stockpiles, the base shall be sloped to create leachate collection points, and storm water runoff will be diverted away from any soil stockpile or storage area when feasible.

Soil may be more conveniently live loaded into trucks for offsite disposal at an appropriately licensed facility or temporarily stored within secure, water resistant, DOT-approved bulk containers. Stockpiled or containerized soil will be stored within a secure area of the Site and properly labeled to minimize potential contact. In addition, soil stockpiled or otherwise stored at the Site will be inspected daily for tears, holes, or other failures in the polyethylene sheeting or storage container.

If petroleum saturated soil is encountered, soil will be left in the associated excavation until waste characterization samples can be analyzed and soil can be live loaded.

#### *Dust Control*

Dust control requirements will be a contractual responsibility of the contractor for the Site and will be documented by the Owner's QEP during remediation activities. Dust control measures shall be employed by the contractor during excavation and grading and to control dust around stockpiles, haul roads, and any other exposed soils.

- At a minimum, wet suppression shall be used to provide temporary control of dust. Wet suppression will be applied on a routine basis and/or as directed by the Owner's QEP to



adequately control dust. Depending upon weather conditions and work activity, several wet suppression applications per day, and/or the use of granular calcium chloride or similar commercially manufactured dust control agents may be necessary to adequately control dust.

- Water runoff generated by dust control will be retained and disposed in accordance with the requirements of the appropriate regulatory agencies.
- Vehicles leaving the Site shall have no mud or dirt on the vehicle body or wheels. Any foreign matter on the vehicle body or wheels will be physically removed prior to vehicles entering a public roadway or adjoining mill driveways. Vehicles will not be permitted to leave the Site with exterior mud or dirt that has the potential to be deposited on public roadways.

### **Onsite Reuse of Soil**

After adequate relocation and removal, if needed, of impacted soils, all areas of the Site should be covered according to the below specifications:

- All features and subsurface infrastructure will be installed and the grading of impacted materials shall be completed consistent with the design requirements for the Site.
- Any excess or future identified impacted soil that cannot be re-used at the Site will be removed in accordance with this section of this SGMP.
- The engineered barrier system will cover the entire Site and will consist of the following in each of the areas:
  - Landscaped Areas: A permeable geotextile fabric or similar material, such as snow fence will be placed as a marker layer directly over the impacted soil to indicate the distinction between the clean fill cover and the underlying impacted soil to remain at the Site. A minimum of 1 foot of clean fill will be placed as cover material over the marker layer. 2 feet of clean fill will be used in areas designed specifically for child outdoor play that is not covered with well-established grass or hardscape (e.g., mulched or tire chipped play areas where digging could result). The source of fill will be documented to be a local native source or will be documented to be clean through analytical testing. The covered areas will be loamed, seeded, mulched, or otherwise permanently stabilized to prevent erosion and damage to the soil cover. If the marker layer must be compromised to facilitate landscape installation, a replacement marker layer shall be installed prior to the placement of any new non-impacted material.
  - Building Foundation and Concrete Areas: Areas planned for impermeable construction (e.g., concrete walkways and the Site building foundation) will be installed directly over the impacted soil. A separate marker layer will not be necessary below impermeable surfaces since these materials will serve as the marker layer. The geotextile marker layer will extend from landscaped areas to the exterior limit of these impermeable areas.



- Each covered area will be graded so that the stormwater runoff is directed to an appropriate area.
- Additional sub-base materials may be necessary beyond the minimum cover requirements discussed herein to maintain the structural integrity of the proposed site features.

An engineered barrier system schematic is included as **Figure 3**.

### **Offsite Soil Disposal/Recycling**

Excess impacted soil that cannot be reused will be transported and disposed offsite in accordance with applicable federal and state regulations. Written Maine DEP approval is required prior to removal of impacted soil from the Site. The following subsections provide appropriate procedures for the characterization and offsite disposal of special waste soil.

#### *Waste Characterization Sampling*

Waste characterization sampling will be required in order to meet facility acceptance requirements. As such, the QEP will collect representative samples from the special waste soil for analysis by an independent, Maine-certified laboratory. At a minimum, and in accordance with disposal facility requirements, laboratory criteria will include, but may not be limited to, the following analyses:

- Total petroleum hydrocarbons (TPH)
- VOC
- Semi-volatile organic compounds (SVOC)
- PCB
- Resource Conservation and Recovery Act (RCRA) 8 Metals
- Pesticides
- Herbicides
- pH
- Ignitibility, conductivity, and reactivity (sulfide and cyanide)
- Additional toxicity characteristics leaching procedure (TCLP) analysis, where necessary

Following receipt of the results of the above analyses, an appropriate disposal or recycling method will be selected and a waste profile will be prepared and submitted to the facility for acceptance prior to shipping. The facility will be licensed to accept special waste and acceptance will be based on the waste characterization sample results. Possible licensed facilities for recycling or disposal based on the existing analytical results include CPRC Group in Scarborough, Maine (recycling, preferred); Aggregate Recycling Corporation (ARC) in Eliot, Maine (recycling, preferred); Waste Management in Norridgewock, Maine (landfill disposal); or Juniper Ridge in Old Town, Maine (landfill disposal).

### *Soil Transport and Recycling/Disposal*

Following facility acceptance, impacted soil will be removed from the Site for proper recycling or disposal. The loading of impacted soil will be conducted in accordance with the requirements of this SGMP. Impacted soil loading and transport activities will be overseen by the owner's QEP. Equipment used for the transport of impacted soil will be properly licensed in accordance with applicable state and federal regulations. Haul truck cargo areas shall be securely and completely covered during material transport on public roadways.

Each shipment of impacted soil will be accompanied by appropriate transport documentation, such as a hazardous waste manifest or bill of lading. An official record of each shipment of impacted soil from the Site, including tonnage, will be presented to the owner's QEP following delivery to the receiving facility.

### **Backfill Materials**

Backfill materials shall be sourced from a local native source and will be documented as clean fill.

## **4. GROUNDWATER MANAGEMENT**

The use of groundwater at the Site as a potable water source or otherwise (e.g., hand washing, etc.) is prohibited and all potable water should be provided to the Site via a public water source.

Impacted groundwater was identified at the Site during previous assessment activities. As part of Site redevelopment, any excess groundwater generated during excavation activities for utilities, foundations, and other subsurface structures will be collected and managed in accordance with this section.

### **General Dewatering of Excavations**

- Surface water will be prevented from flowing into excavations at the Site and trench excavations will not be used as temporary drainage ditches.
- Pumps, well points, sumps, hoses, filters, and all other dewatering system components will be provided and maintained as necessary to convey water away from excavations.
- The suspended solids content in the water shall be minimized during dewatering activities by lining the excavation collection area with crushed stone and placing the pump intake in a perforated bucket.
- Water removed from excavations shall be conveyed to an onsite frac tank.
- **Silt laden or untreated water shall not be discharged directly to the storm, sanitary or combined sewer without first receiving appropriate approvals and meeting appropriate state and municipal pretreatment and permitting requirements.**

### **Collection and Disposal at Treatment/Disposal Facility**

The preferred method of groundwater management is collection, testing, and disposal at the Portland Water District (PWD) Publicly Owned Treatment Works (POTW) in Portland, Maine, or



other appropriately licensed facility based on testing results. These methods require approval prior to discharge. The methods for storage, testing, and disposal are described below:

- Water removed from excavations shall be stored in a frac tank to allow settling of solids and testing prior to discharge. The frac tank inlet shall be placed at the opposite end from the tank outlet.
- If needed for additional detention or storage volume, additional tanks shall be placed in series for secondary settlement.
- The contractor shall obtain all local, state, and federal approvals necessary for the discharge of the water to the PWD POTW.
- Prior to discharge of the initial tank load, the contractor shall collect water samples for laboratory analysis in accordance with the applicable requirements of the PWD POTW. Test results will be provided to the Environmental Professional and the City of Portland (the City) Environmental Engineering Department.
- Once sampled, no water or other materials shall be added to the frac tank.
- All additional frac tank loads shall be tested in accordance with PWD requirements prior to discharge.
- Bag filters will be installed on the discharge piping and water will meet the City's Industrial Pretreatment Program discharge limitations prior to discharge. Groundwater determined to have contaminant levels exceeding the City's Industrial Pretreatment Program limits shall be treated prior to discharge or disposed at another licensed disposal facility (e.g., NRC in South Portland, Maine).
- Water shall be transferred from each tank by suspending the intake line immediately below the water level to minimize disturbance of sediment at the bottom of the tank.
- The contractor will cease discharge immediately upon discovery through testing or other means that discharge is not in compliance with the requirements of local, state, or federal regulations or permits.
- Following the discharge of water from the frac tank(s), any accumulated sediment or other solid materials will be managed in accordance with **Section 3** of this SGMP.

### **Incidental Groundwater**

Groundwater may percolate up to the ground surface during the installation of piles and/or during the compaction of soils. This groundwater may be allowed to infiltrate back into the subsurface environment; however, it must be prevented from entering the stormwater system.



## 5. PROJECT CONTACTS

Depending on the complexity of the issue, the following people will be able to answer questions or refer inquiries to the correct person.

Children's Museum & Theatre at Thompson's Point – Contact Information Site Soil Management Plan		
Organization	Person	Phone Number
Property Owner Forefront Partners I, LP Forefront Commons I, LLC Forefront Hoteliers, LLC	Chris Thompson Bo Kennedy	(207) 747-5288
Qualified Environmental Professional (QEP) Crede Associates, LLC	Allison Drouin	(207) 828-1272 x15
Maine DEP Project Manager	Becky Blais	(207) 446-2564

If there are any questions, please contact the undersigned.

Sincerely,  
**Crede Associates, LLC**



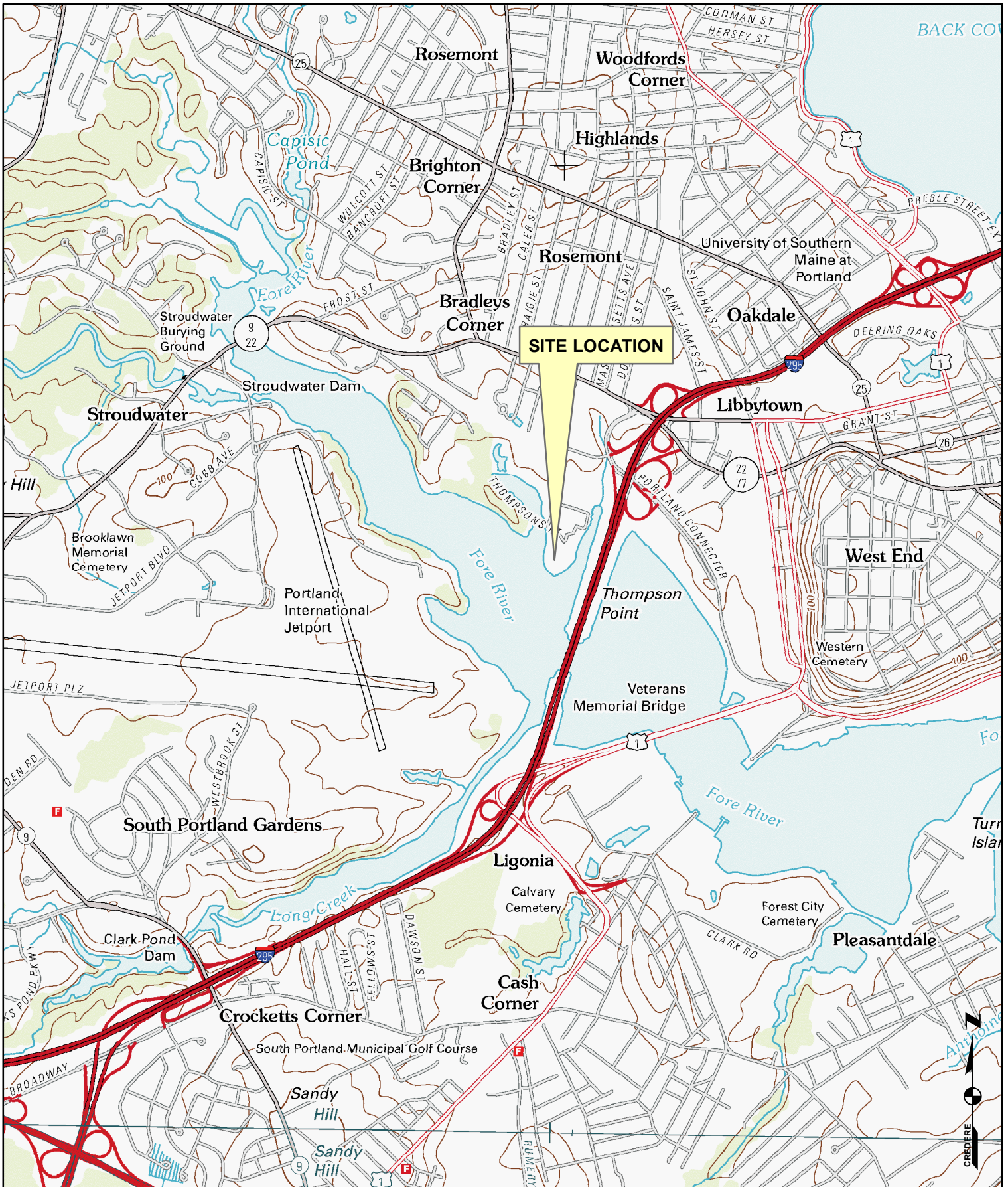
Allison Drouin, CG, PG  
Geologist



Rip Patten, PE, LSP, LEED-AP  
Vice President

Attachments: Figure 1 – Site Location Plan  
Figure 2 – Detailed Site Plan  
Figure 3 – Engineered Barrier System Schematic



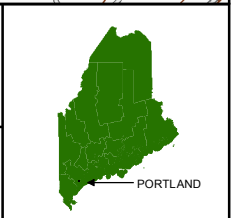


DRAWN BY: <b>MAK</b>	DATE: <b>02/08/2017</b>
CHECKED BY: <b>ASD</b>	PROJECT: <b>1101128</b>
<b>Crede Associates, LLC</b> 776 MAIN STREET WESTBROOK, MAINE Tel. 207.828.1272 Fax 207.887.1051 WWW.CREDERELCC.COM	

**FIGURE 1**  
**SITE LOCATION PLAN**

SUBDIVISION LOTS 4 - 13 AND 16 - 19  
THOMPSON'S POINT  
PORTLAND, MAINE

1,000      0      2,000  
  
 Feet  
 1 INCH = 2,000 FEET



Data Source: USGS Quadrangles: Portland East; Portland West; Cape Elizabeth; Prouts Neck, Maine 7.5 minute series 2011



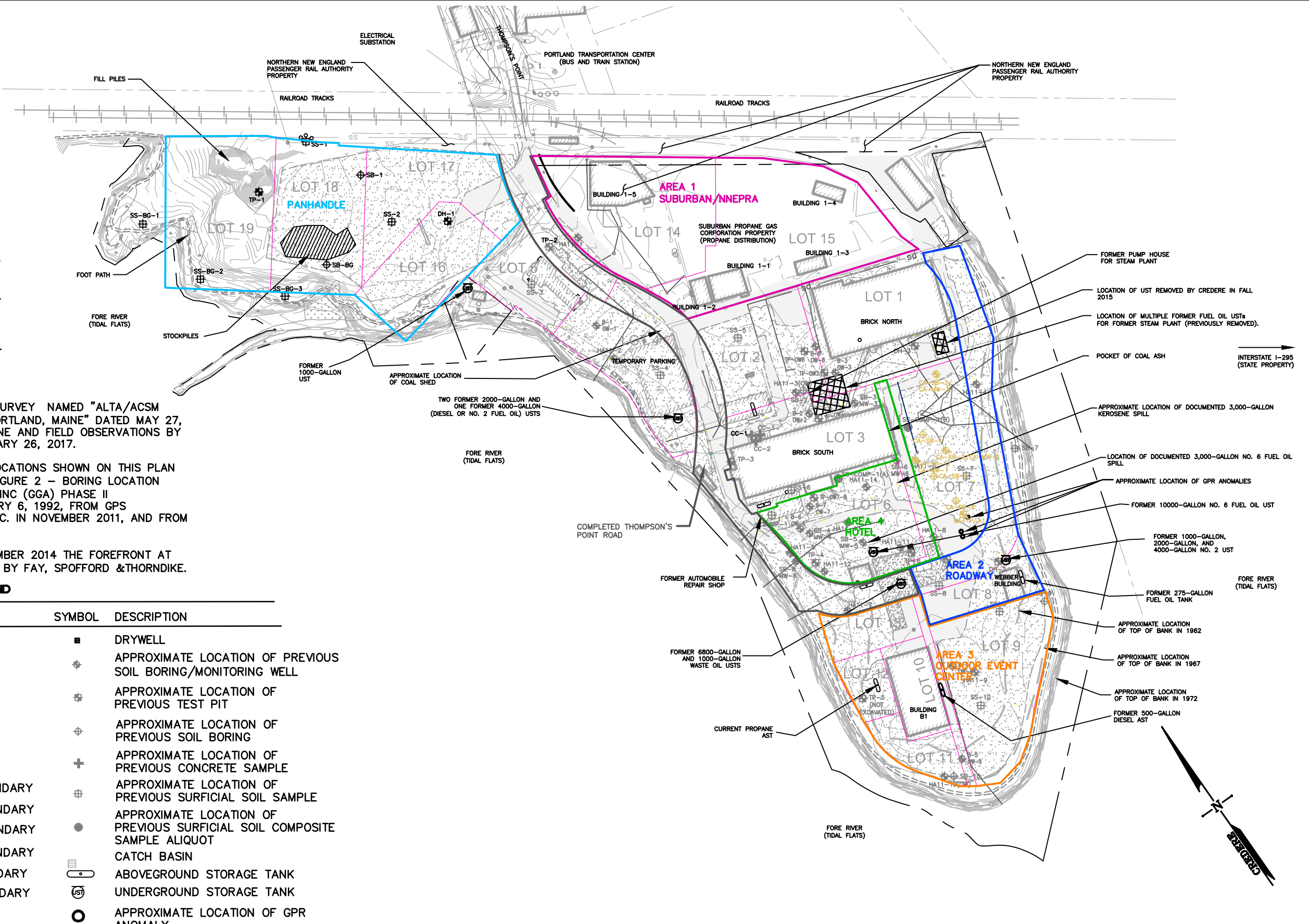
LOT ID	AREA (SF)	AREA (AC)
COMMON AREA	507,368	11.65
1	63,335	1.45
2	44,355	1.02
3	57,007	1.37
4	41,410	0.95
5	24,240	0.56
10	17,279	0.40
6	50,243	1.15
8	17,504	0.40
9	59,024	1.36
11	13,873	0.32
12	11,329	0.26
13	15,323	0.35
7	48,958	1.12
14	57,345	1.32
15	80,136	1.84
16	37,983	0.87
17	44,896	1.03
18	54,336	1.25
19	66,399	1.52
TOTAL	1,312,346	30.13

**NOTES:**

- INFORMATION ON THIS PLAN OBTAINED FROM A SURVEY NAMED "ALTA/ACSM LAND TITLE SURVEY OF 1 THOMPSON'S POINT, PORTLAND, MAINE" DATED MAY 27, 2011, BY SEBAGO TECHNICS OF WESTBROOK, MAINE AND FIELD OBSERVATIONS BY CREDERE ASSOCIATES, LLC PERSONNEL ON JANUARY 26, 2017.
- PREVIOUS SOIL BORING AND MONITORING WELL LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE BASED ON A PLAN NAMED "FIGURE 2 - BORING LOCATION PLAN" FROM GEMINI GEOTECHNICAL ASSOCIATES, INC (GGA) PHASE II ENVIRONMENTAL SITE ASSESSMENT DATED JANUARY 6, 1992, FROM GPS COORDINATES PROVIDED BY HALEY & ALDRICH INC. IN NOVEMBER 2011, AND FROM CREDERE'S JULY 11, 2012, PHASE II ESA.
- SUBDIVISIONS SHOWN ARE BASED ON THE SEPTEMBER 2014 THE FOREFRONT AT THOMPSON'S POINT SUBDIVISION PLAN PREPARED BY FAY, SPOFFORD & THORNDIKE.

**LEGEND**

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PROPERTY LINE		DRYWELL
	ABUTTER PROPERTY LINE		APPROXIMATE LOCATION OF PREVIOUS SOIL BORING/MONITORING WELL
	FORMER TOP OF BANK LINE		APPROXIMATE LOCATION OF PREVIOUS TEST PIT
	EDGE OF PAVEMENT		APPROXIMATE LOCATION OF PREVIOUS SOIL BORING
	EDGE OF GRAVEL		APPROXIMATE LOCATION OF PREVIOUS CONCRETE SAMPLE
	EXISTING BUILDING		APPROXIMATE LOCATION OF PREVIOUS SURFICIAL SOIL SAMPLE
	FORMER BUILDING		APPROXIMATE LOCATION OF PREVIOUS SURFICIAL SOIL COMPOSITE SAMPLE ALIQUOT
	RAILROAD TRACK		CATCH BASIN
	APPROX. SITE AREA 1 BOUNDARY		ABOVEGROUND STORAGE TANK
	APPROX. SITE AREA 2 BOUNDARY		UNDERGROUND STORAGE TANK
	APPROX. SITE AREA 3 BOUNDARY		APPROXIMATE LOCATION OF GPR ANOMALY
	APPROX. SITE AREA 4 BOUNDARY		
	APPROX. PANHANDLE BOUNDARY		
	APPROX. SUBDIVISION BOUNDARY		
	EXISTING STORM DRAIN		



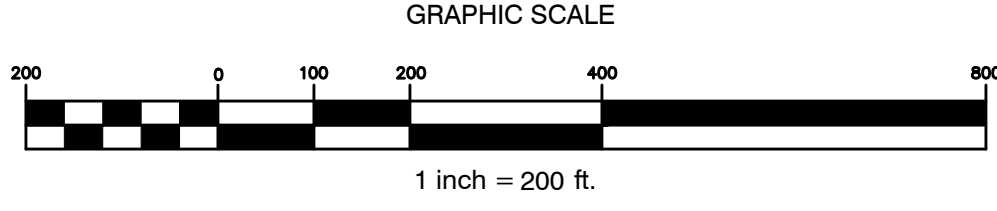
**Community Economy Environment**

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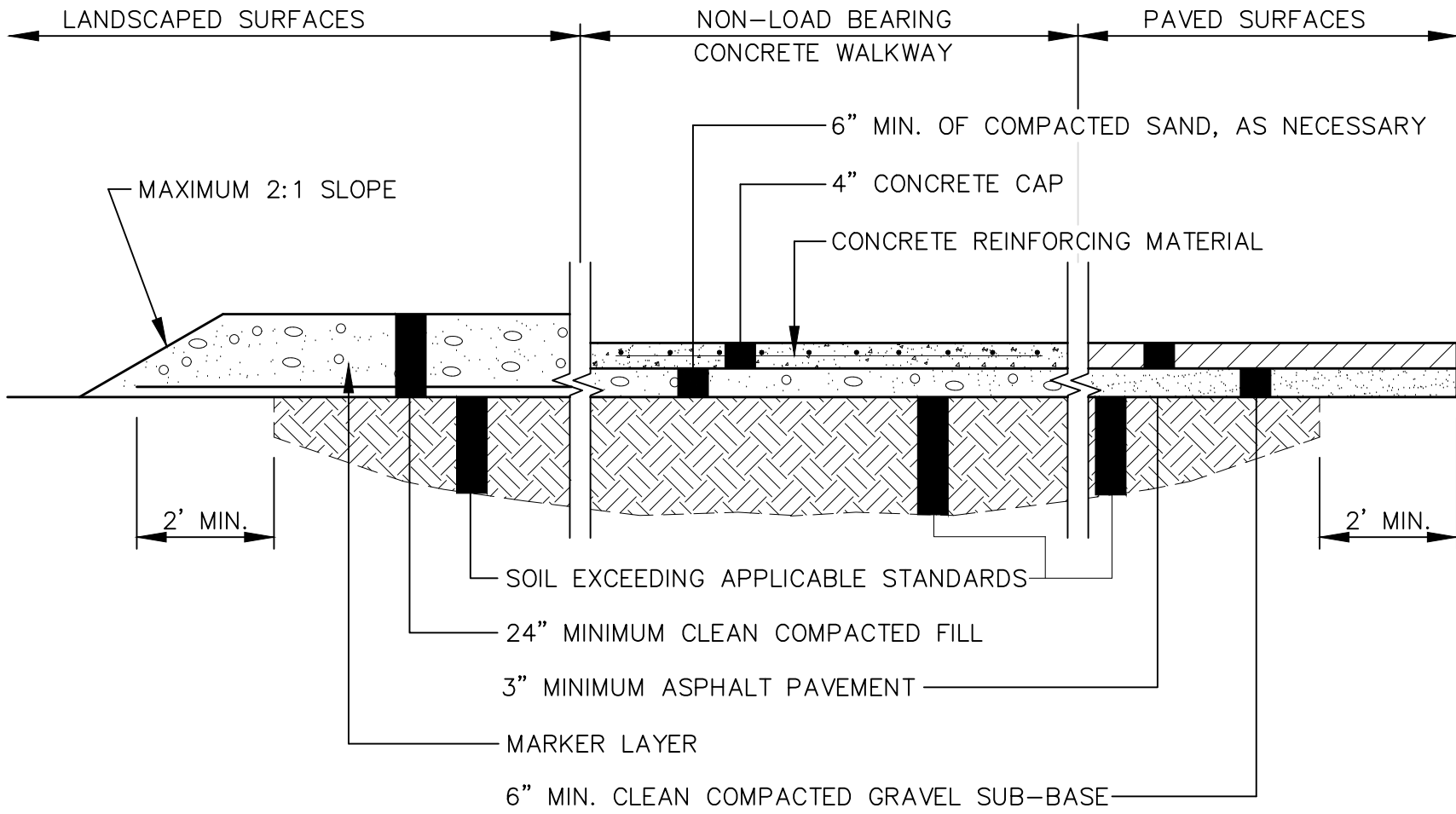
<b>DATE:</b> 4/2/2018
<b>PROJECT #</b> 17001387
<b>DRAWN BY:</b> SAF
<b>CHECKED BY:</b> ASD

**FIGURE 2**  
**DETAILED SITE PLAN**

**THOMPSON'S POINT**  
**PORTLAND, MAINE**



J:\CREDERE\11001128 - Thompson's Point\2018 - AEC\A.dwg - plot - 4/24/2018 9:44 AM



**NOTE**

THE QUANTITIES IDENTIFIED ARE MINIMUM REQUIREMENTS FOR ADDRESSING THE IDENTIFIED CONTAMINATED SOILS. ADDITIONAL SUB-BASE MATERIALS MAY BE REQUIRED IN AREAS PROPOSED FOR ASPHALT PAVING AND/OR CONCRETE SIDEWALKS AS NECESSARY AND IF APPLICABLE, TO MAINTAIN STRUCTURAL INTEGRITY OF THESE MATERIALS.

DRAWN BY: MTG/SAF DATE: 04/18/2018  
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SKETCH NO:  
**FIGURE 3**  
 SCALE:  
**N.T.S.**

**ENGINEERED BARRIER SYSTEM  
 SCHEMATIC**

THOMPSON'S POINT  
 PORTLAND, MAINE