ENVIRONMENTAL MEDIA MANANGEMENT PLAN
BELFAST FIRE STATION
273 MAIN STREET
BELFAST, MAINE

Prepared for:
Eastern Maine Development Corporation
Bangor, Maine

and

The City of Belfast, Maine

Prepared By:
Campbell Environmental Group
173 Gray Road, Falmouth, Maine 04105

March 2024

CAMPBELL
ENVIRONMENTAL GROUP

March 8, 2024

Mr. Cole Avrill
Eastern Maine Development Corporation
40 Harlow Street
Bangor, Maine 04401

Thomas Kittredge, Economic Development Director
City of Belfast
131 Church Street
Belfast, Maine 04915

Re: Environmental Media Management Plan
Belfast Fire Station
273 Main Street
Belfast, Maine 04915

Dear Mr. Kittredge,

Campbell Environmental Group, Inc., (CEG) has prepared this Environmental Management Plan (EMMP) at your request to address the recommendation made by CEG in their Phase II Environmental Site Assessment 273 Main Street, Belfast, Maine, and dated January 24, 2024 (Phase II ESA). The purpose of the EMMP is to provide guidance and notification requirements if contamination is encountered during future excavation activities at the site. Based on the results of the Phase II ESA, detected Per- and Polyfluorinated Substances (PFAS), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metal concentrations in soil did not exceed the Maine Department of Environmental Protection Remedial Action guidelines for Contaminated Sites (RAGs), dated November 15, 2023 for the Commercial/Construction Worker scenario.

If you have any questions or comments, please do not hesitate to contact us. We appreciate the opportunity to work with you on this project.

Sincerely,

Richard Campbell
Maine Licensed Geologist
President

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1.0 INTRODUCTION

This Environmental Media Management Plan (EMMP) has been prepared for Eastern Maine Development Corporation (EMDC) and the City of Belfast, Maine through a Brownfields grant awarded by the United States Environmental Protection Agency (EPA). The City of Belfast is the current owner of the Belfast Fire Station property located at 273 Main Street, Belfast, Maine (Site) (**Figure 1**). This EMMP is intended to address the recommendation specified in the Phase II Environmental Site Assessment 273 Main Street, Belfast, Maine, and dated January 24, 2024 (Phase II ESA).

This EMMP is to be used by users of the Site to properly conduct any actions that may disturb soil or groundwater within the Site. These activities could include but are not limited to construction and maintenance that involves subsurface disturbance, excavation of soil, or groundwater extraction. This EMMP describes actions that should be followed when any soil disturbance activities are conducted.

1.1 Background

The Subject Property is a portion of the entire 38.5-acre parcel identified by the City of Belfast as Tax Map 12, Lot 50. This portion is approximately 300 feet along the frontage of Main Street and extends 500 feet perpendicular to Main Street (the southwestern portion of the lot). Main Street has also been referenced as Belmont Avenue and U.S. Route 3. Two buildings occupy the Subject Property. The Fire Station building is 8,520 square feet (60 feet by 110 feet) and a second building which is referred to as the Museum is 74 feet by 28 feet. In 2011, an addition to the Fire Station consisting of the west garage bay was constructed. The City of Belfast acquired the property in 1973 for the purpose of constructing the fire station. According to tax assessor records, the Museum building was constructed in 1979 and the Fire Station building in 1987.

Paved parking is located between the buildings and Main Street. Behind the building is cleared and has been used as a location for snow removal for many years and fire safety training. The topography of the Subject Property is relatively flat with two 4-6 feet deep drainage swales on the east and west sides of the Fire Station building. The Fire Station building is heated by #2 fuel oil stored in an aboveground storage tank (AST) located inside the Fire Station building. A propane AST fuels the outside generator. The Museum building is not heated. Overhead electrical lines run along the north side of Main Street. The Subject Property is currently operating as the City Fire Station. The Museum building is used for storage and is not open to the public.

Historical and current gasoline service stations within a 0.25-mile radius of the Subject Property include: the former Sunoco/Texaco on the western adjacent property and the former Exxon station further west of the Subject Property; and the former CN Brown/Big Apple and current Maritime station across Main Street to the south. Although MEDEP required cleanup at these locations residual gasoline impacts remained due to site constraints.

It is likely historic storage and usage of Per- and Polyfluorinated Substances (PFAS) containing fire surfactants occurred at the Subject Property prior to the phasing out of PFAS containing substances. At least one container of Class B aqueous film-forming foam (AFFF) was observed in the Fire Station. The container was called Universal Plus 3/6 AR-AFFF, which according to data reviewed, is considered a Class B AFFF. According to the National Environmental Management Academy, Class B AFFF most likely contains or transforms to PFAS. The product known as Knockdown, a Class A AFFF, was also observed at the Belfast Fire Station, but Class A AFFFs are not considered to be precursors for PFAS contamination and therefore will not be discussed further in this EMMP.

Drilled holes were observed in the concrete slab of the Fire Station building for the purpose of draining snow melt and stormwater. Apparently, the slab elevation is lower than the pavement beyond the building footprint and stormwater enters during rain events. These drilled holes may act as a conduit for any products released in the Fire Station to discharge to the subsurface. According to Fire Chief Richards, the floor trench and floor drain discharge to an underground concrete sump near the northwest corner the Fire Station which has an outlet that discharges to the western drainage swale.

The area behind the Fire Station building has been utilized for snow storage and melt for many years. This practice has the potential of importing nonpoint source contaminants to the Subject Property and with the snow melt, could potentially impact soils, subsurface soils, groundwater, and surface water (drainage swales) at the Subject Property.

The age of the buildings is relatively new (1979 and 1984) compared with known hazardous building materials that were common prior to 1978. However, if the building(s) are slated for demolition, certain hazardous materials should be tested and verified and removed if they exist.

The following recognized environmental conditions (RECs) were identified by CEG through review of federal, state and local records, observations during the site reconnaissance, and interviews with knowledgeable persons.

- CEG has identified AFFF surfactants present at the facility potentially containing PFAS. Although no evidence of current releases of these AFFFs, the use of these surfactants in and outside the facility historically could pose a risk to human health and the environment.

- Residual petroleum from two former and one current gasoline station could pose a vapor encroachment condition and any future building especially constructed with a basement is susceptible to vapor intrusion without appropriate sampling or confirmatory data.

- The practice of stockpiling snow from nonpoint sources on-site creates a risk that contaminants may leach to the ground surface.

- Although the holes in the concrete slab assist with drainage issues, the holes are providing a conduit for any potential contaminants to discharge to the subsurface below the building's slab. Also, the floor drains discharging to the western drainage swale is a potential pathway for any contaminants spilled on the floor to be released to the environment.

CEG recommended a Phase II ESA be conducted to confirm or dismiss the potential of contamination (the RECs listed above) that could impact human health and the environment. The Phase II ESA was completed and is described below.

1.2 Previous Site Work

CEG proposed the following scope of work to investigate the identified areas of concern (AOCs):

- Attempted five geoprobe borings throughout the Subject Property to confirm the presence or absence of contaminants at each area of concern. Boring refusal occurred at each location prior to encountering groundwater; therefore, no monitoring wells were installed;
- Collected six surface soil samples at various locations to confirm the presence or absence of contaminants of concern at each area of concern;
- Screened geoprobe boring soils for volatile organic compounds (VOCs) using a photoionization detector (PID) and headspace technique;
- Selected a minimum of one soil sample from each soil boring for laboratory analysis of extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH);
- Collected soil gas samples from the sub-slab soil within the Fire Station building and soil gas samples from the north and south of the Museum building foundation; and
- Conducted a location survey of the sample locations.

1.2.1 Soil Screening Results

CEG screened soils from each 5 foot interval acetate liner sampler per boring, if sufficient recovery was achieved. The VOC screening results ranged from 0.2 parts per million (ppm) to a high of 0.5 ppm.

1.2.2 Soil Sampling Results

Volatile Organic Compounds

No VOCs were detected above the corresponding reporting limits for any of the soil samples analyzed (SS-1, SS-1 Dup, SS-5, SS-6, and SB-4).

Semi-volatile Organic Compounds

Extremely low levels of fluoranthene, pyrene, chrysene, benzo(b) fluoranthene, and benzo(g,h,i)perylene were detected in soil samples SS-1, SS-1 Dup, SS-5, and SS-6 but not SB-4A. No detected concentration exceeded a corresponding Commercial or Construction Worker RAG scenario.

Metals

Soil samples SS-1, SS-1 Dup, SS-4, SS-5 and SS-6 were analyzed for select metals. No metal exceeded a Maine Department of Environmental Protection (MEDEP) Remedial Action Guideline (RAG) for the published Commercial or Construction Worker scenario. This scenario was considered the most appropriate human health exposure scenario for the current use of the Subject Property.

Extractable Petroleum Hydrocarbons (EPH)

Soil samples SB-1, SB-2, SB-3, and SB-4A were analyzed for EPH. No EPH compounds were detected above the reporting limit in any of the four soil samples analyzed.

Volatile Petroleum Hydrocarbons (VPH)

Soil samples SB-1, SB-2, SB-3, and SB-4A were analyzed for VPH. C5-C8 aliphatics were detected at concentrations ranging from 4.2 milligrams per kilogram (mg/kg) in sample SB-2 to 5.6 mg/kg in sample SB-3. The Commercial and Construction Worker RAG is 100,000 mg/kg for this contaminant. Therefore, the concentrations are significantly lower that the RAG scenario and not considered a threat to human health.

1.2.3 Ambient Air and Soil Gas Sample Results

An ambient air sample was collected from the interior of the fire station building (Fire Station Amb) and outside of the museum (Museum Amb) for the purpose of these samples was to compare background concentrations at the Subject Property to concentrations in the sub-slab and soil gas samples. The ambient air sample inside the fire station had no VOC compounds exceeding a Commercial Indoor Air RAG and the ambient air outside the museum building had no VOC compound concentrations exceeding an Ambient Air RAG at the time of the sampling. The results of the ambient air quality of the interior of the fire station building (Fire Station Amb) indicates some VOCs such as toluene, ethyl benzene, and xylene are present at relatively higher concentrations in the ambient air than corresponding concentrations in the sub slab samples SG-3 and SG-4. The result of the ambient air outside the museum indicates methyl ethyl ketone (MEK) as the only compound slightly higher than corresponding MEK concentrations in the soil gas samples. Following the collection of soil gas SG-2, CEG discovered someone at the fire station had used spray paint outside the easterly garage bay of the fire station building. Based on material data sheets for general spray paints, common hazardous properties of spray paint may include, but not be limited to, toluene, hexane, ethyl benzene, acetone, and xylene.

The only VOC compound detected that exceeded a corresponding Indoor Air RAG for samples collected by CEG (SG-1, SG-2, SG-3, SG-4, and SG-4 Dup) was SG-4 and SG-4 Dup for the compound 1,3-butadiene. The concentrations of 1,3 butadiene were 8.25 micrograms per cubic meter (ug/m^3) and 6.86 ug/m^3, respectively compared to the Commercial Indoor Air RAG of 4.1 ug/m^3. Using a 33 percent attenuation factor, the 1,3-butadiene concentrations are converted to 2.7225 ug/m^3 and 2.2638 ug/m^3, respectively, which are both below the corresponding Commercial Indoor Air RAG of 4.1 ug/m^3. Therefore, no adverse vapor intrusion is anticipated which would impact human health.

2.0 CONTAMINANTS OF POTENTIAL CONCERN AND APPLICABLE REGULATORY CRITERIA

2.1 Areas and Contaminants of Concern

Based on site use and potential off-site sources, the contaminants of potential concern (CoPC) include VPH and EPH associated with off-site gasoline service stations and on-site uses of minor vehicle maintenance products, non-point source contaminants from the snow melt piles, and PFAS from fire fighting drills conducted behind the fire station. Although the site assessment did not detect CoPC at concentrations exceeding corresponding RAGs, there is a potential that these contaminants are present, but have not been discovered. Therefore, this EMMP will take a conservative approach as it relates to the presence of CoPC across the entire Site. CoPC that have been identified or are likely to be found include: PFAS, VOCs, SVOCs, EPH, VPH, and metals. The majority of these contaminants have the potential to be found in either soil, soil gas, and groundwater. While additional assessment or remediation of portions of the Site is not warranted at this time, any future soil disturbance activities and or groundwater extraction should be undertaken with caution. The primary intent of this EMMP is to inform relevant parties of potential environmental hazards and ensure that any suspect material is evaluated in a manner adequately protective of human health and the environment.

2.2 Contaminants of Concern Exposure Pathways

Metals and Semi-Volatile Organic Compounds (SVOCs)

The fate and transport of metals, EPH, and SVOCs in the environment are similar. In general, these constituents tend to have very low solubility and mobility and will, therefore, tend to stay adsorbed to the soil particles and not migrate substantially into the water column. Metal solubility is affected by environmental factors including soil pH and soil temperature. If, for instance, an area exhibits very acidic soil conditions, the mobility of metals will greatly increase. The solubility of SVOCs is affected by their molecular weights. As a result, it is likely that some SVOCs will mobilize more readily. Once metals and SVOCs are released to the environment, they have the potential to negatively impact sensitive receptors including commercial workers, construction workers, and fauna.

Once a contaminant has entered the groundwater, the rate of contaminant movement is influenced by many factors. These factors include physical and chemical properties of the contaminant and the aquifer. In general, once a contaminant reaches the groundwater, the contaminant will move as the groundwater moves through the process of advection (travel in the direction of groundwater flow) and dispersion (spreading vertically and horizontally).

VOCs and VPH

Some VOCs and VPH, such as toluene and xylene, have a greater persistence than other VOCs, and are, therefore, expected to remain in the soil profile for a longer duration. Processes that naturally reduce VOC concentrations include volatilization, biodegradation, and dilution. Collectively, these processes are known as natural attenuation and given favorable conditions, can reduce the concentrations of VOCs and VPH over time.

VOCs and APH also pose a risk to inhalation within buildings from a process called vapor intrusion (VI). VI requires five components to be considered a health threat. These are: 1) a source, 2) a pathway between the source, 3) a building susceptible to vapor intrusion, 4) vapors in the building; and 5) building occupants when the vapor-forming chemical(s) is (are) present indoors.

PFAS

Per- and polyfluorinated substances (PFAS) consist of over 12,000 compound mixtures. These compound's chemistry may differ between long versus short carbon chains, branch versus linear composition, and different molecular charges (anions). Precursor compounds and legacy polyfluorinated PFAS may transform abiotically to Perfluoroalkyl acids (PFAAs) and other more stable PFAS molecules under ambient environmental conditions via:

- Hydrolysis (reacting with water);
- Photolysis (reacting with sunlight); and
- Oxidation (reacting with radicals and other reactive species).

PFAAs are comprised of several subgroups including the two most common listed below:

1) Perfluoroalkyl carboxylic acids (PFCAs);
    - Perfluorooctanoic acid (PFOA) is a PFCA frequently detected in air, surface water, and stormwater;
2) Perfluoroalkane sulfonic acids (PFSAs);
    - Perfluorooctane sulfonate or perfluorooctane sulfonic acid (PFOS) is a PFSA frequently detected in air, surface water, and stormwater.

General characteristics of PFAAs are:

- Relatively mobile in groundwater but tend to associate with the organic carbon fraction of soil and sediment;
- Less volatile than many other groundwater contaminants;
- Sometimes transported on airborne particles and as aerosols; and
- Generated by abiotic and biotic transformation of precursors (polyfluorinated PFAS).

PFAS Partitioning Summary:

- In general, longer chain PFAS sorb more strongly than shorter chain PFAS of the same functional group;
- Linear PFAS isomers sorb more strongly than branched isomers;
- PFSAs generally sorb more strongly to soil than PFCAs of the same carbon chain length; and
- Both PFCA and PFSA mobility decrease with decreasing pH and decrease with increasing polyvalent cations (e.g., hardness [Ca2+ & Mg2+]).

In general, PFAS tend to be very stable and resistant to degradation. They feature low vapor pressures, high water solubility, and are prone to sorption through electrostatic forces and organic carbon. PFAS are bio-accumulative and may be toxic at very low concentrations.

PFAS pathways to human receptors include inhalation and digestion through hand to mouth transfer of contaminants. Sources of PFAS include, but are not limited to, rain water (atmospheric deposition), AFFF used in fire suppression and in the manufacturing of fire fighter clothing transforming to PFAS compounds. AFFFs have been incorporated into the fire suppression industry since the 1960's. CEG observed Universal Plus 3/6 AR-AFFF at the Belfast Fire Station, which according to data reviewed, is considered a Class B AFFF. According to the National Environmental Management Academy, Class B AFFF most likely contains or transforms to PFAS. Other similar products may have been used prior to the current phase out of PFAS containing products.

The following is per the Interstate Technology Regulatory Council's (ITRC) *PFAS Technical & Regulatory Guidance Document*, dated June 2022: Class B firefighting foams are commercial surfactant solutions that are designed and used to combat flammable fuel fires. Class B AFFF have been (and continue to be) stored and used for fire suppression, fire training, and flammable vapor suppression at military installations and civilian facilities and airports, as well as at petroleum refineries and bulk storage facilities and chemical manufacturing plants. Additionally, local community fire departments have used and may maintain quantities of firefighting foam in their inventories for use in training and emergency response.

In terms of current usage and environmental considerations AFFF products can be divided into three categories: 1) legacy Perfluorooctane sulfonic acid (PFOS) AFFF; 2) legacy fluorotelomer AFFF; and 3) modern fluorotelomer AFFF.

Legacy PFOS AFFF was manufactured in the United States from the late 1960s until 2002 exclusively by 3M and sold under the brand name "Light Water". Legacy PFOS AFFFs contain PFOS and perflouroalkane sulfonates (PFSAs) such as perfluorohexane sulfonate (PFHxS). Although phased out of production in 2002, legacy PFOS AFFFs are the dominant source of PFAS at AFFF-impacted sites. Furthermore, because of its long shelf life, stock of legacy PFOS AFFF could exist at any given fire department today.

2.3 Applicable or Relevant and Appropriate Regulatory Requirements

The primary applicable or relevant and appropriate regulatory requirements related to the Subject Property currently include MEDEP RAGs, Commercial Worker and Construction Worker exposure scenarios. However, if the use of the property is redeveloped for some other use, such as residential, the regulatory requirement would be adjusted to reflect the proposed use.

The Fire Station is proposed to be relocated providing the site re-developed opportunities. There is no specific proposed plan to date but it is most probable that any water usage will be the public water that is already available at the site and the zoning is not conducive for residential use. Potential sensitive receptors at the Site include humans that may come into direct contact with site soils and or vapors through dermal contact, inhalation, or ingestion. Risk based exposure scenarios and corresponding guidelines for contaminant concentrations are presented in the MEDEP Remedial Action Guidelines for Contaminated Sites (RAGs), dated November 15, 2023. These guidelines (or the most recent iteration) are intended to assess the potential threat specific constituents may pose to sensitive receptors.

Exposure scenarios are considered for a range of potential land uses including residential, recreational, commercial, and construction activities. **On site soils should initially be evaluated** relative to **Commercial Worker** and or **Construction Worker** exposure scenarios, depending on proposed activities. Relevant corresponding guidelines are presented in Table 4 of the MEDEP RAGs. A description of **Commercial Worker** and **Construction Worker** exposure scenarios include;

Commercial Worker Exposure Scenario

"The Soils RAGs for the Outdoor Commercial Worker Exposure Scenario are protective of all indoor and outdoor commercial uses of sites, including full-time industrial and maintenance workers whose jobs require that they be outdoors for a portion of the workday such as groundskeepers, loading dock workers, parking lot attendants, and mechanics. This scenario can also be used to conservatively evaluate indoor workers who may be routinely exposed to soil briefly during work breaks and outdoor lunches. These RAGs assume exposures to soil by incidental ingestion, dermal contact, and inhalation of contaminants in fugitive dust and ambient air occur over 25 years for the workdays of the year when the ground is not frozen or snow covered. Using Maine specific climate data adjusted for the work week, the RAGs assume a soil exposure frequency of 183 days per year. Contact with soil is assumed to be of lower intensity than assumed for an excavation or construction work scenario since these workers are unlikely to be displacing soil (i.e., digging)".

Excavation or Construction Worker Exposure Scenario

"Note that the RAGs are superseded by any applicable Occupational Safety and Health Administration (OSHA) standards. Exceedance of RAGs should trigger an evaluation of whether OSHA standards apply. If OSHA standards are not applicable, the RAGs should be used to assess the threat posed by the contaminant. The Excavation or Construction Worker Scenario is protective of exposures to soil during high intensity soil disturbance activities such as digging, grading, and back-filling for a construction project lasting up to one year. This scenario can be used to conservatively evaluate a utility worker or landscaper whose exposure may be as intense as an excavation or construction worker, but is expected to be of a lesser duration than a year. Exposures to soil by incidental ingestion, dermal contact and inhalation of contaminants on fugitive dust and in ambient air are assumed to occur at a greater intensity than that assumed for the Outdoor Commercial Worker due to the degree of soil disturbance and displacement anticipated. Due to the exposure intensity and use of sub chronic toxicity factors, for some compounds the Construction Worker soil guideline will be lower than a residential or leaching to groundwater guidelines."

3.0 ENVIRONMENTAL MEDIA MANAGEMENT PLAN IMPLEMENTATION

This section provides protocols and procedures for management of known and potentially impacted soil during any infrastructure improvements/redevelopment activities conducted at the Site. These protocols and procedures have been developed for implementation by workers who could be exposed to known and potentially contaminated soil and groundwater. This section describes protocols and procedures for worker safety, site preparation, identification of potentially contaminated soil during excavation activities, confirmation sampling and analysis, and proper handling and management of known and potentially contaminated soil. Management of known and potentially contaminated soil at the Site will be performed

under the direction of an owner and or Site Representative. **It is highly recommended that the owner or Site Representative responsible for any Site improvements or redevelopment contract with an environmental professional prior to undertaking this work.** This will better ensure human health and the environment are protected from adverse conditions created by CoPC and to better comply with MEDEP rules and regulations.

3.1 Potential Infrastructure Improvements

Potential future infrastructure improvements and or redevelopment at the Site may include installation or repair of subsurface utilities, construction of building foundations, remodeling of structures, and or other subsurface improvements that may result in the exposure for receptors to known and potentially contaminated media. Prior to any redevelopment activities, the owner should consult this EMMP to determine if and at what depth any CoPC were identified or thought to be present during previous assessments.

3.2 Worker Safety

Each contractor will be responsible for ensuring the safety of its employees, including compliance with applicable OSHA regulations and project plans and specifications. The contractor will prepare and implement a Site-specific Health and Safety Plan in accordance with OSHA requirements to ensure adequate protection for workers on the Site. **Contractors performing excavation of known or potentially contaminated soil will have successfully completed the 40-hour Hazardous Waste Operations and Emergency Response training in accordance with 29 CFR 1910.120.**

3.3 Site Preparation

Prior to any soil disturbance activities, preparation activities will be conducted, including installation of Site security measures as necessary to ensure traffic control and protection of workers. Prior to earthwork activities that are subject to erosion and sediment control requirements, erosion and sediment control procedures and protocols will be conducted in accordance with applicable best management practices and federal, state, and local requirements.

3.4 Soil Screening

Known and potentially contaminated soil will be field screened prior to or during excavation for a petroleum odor, an unusual appearance, and/or liquid-phase product. Work will be suspended and the property owner and or Site Representative will be contacted immediately if a petroleum odor, an unusual appearance, and or liquid-phase product is detected. The owner and or Site Representative will also be contacted immediately if transformers, drums, other containers, or USTs are encountered during earthwork activities. The property owner and or Site Representative will perform follow-up field screening of soil for the presence of VOCs using a photoionization detector. The results of the field screening will be evaluated to determine whether characterization sampling is necessary to determine the appropriate soil management protocols for potentially contaminated soil. If contamination is encountered, the owner

or Site Representative will report to MEDEP as necessary. The approach to deciding whether to perform characterization sampling for potentially contaminated soil will be conservative (for instance, if uncertainty exists whether soil may be contaminated, characterization screening and or sampling will be conducted).

3.5 Characterization Sampling

The MEDEP should be contacted prior to any soil disturbance or redevelopment activities at the Site. All future soil disturbance activities have the potential to encounter uncharacterized soil impacted by CoPC. MEDEP personnel should be a part of all decisions related to materials impacted or thought to be impacted by CoPC. Soils suspected to be impacted with CoPCs that are to be characterized, should be placed on an impermeable surface or at least 6-mil polyethylene sheeting and covered. A berm or other appropriate barrier should be placed around the perimeter of the stockpile to prevent soil migration or precipitation runoff from the potentially impacted-soil.

In the event that no material will be leaving the site, actively monitor soils for evidence of potential environmental hazards through visual and olfactory means by on-site personnel. If suspicious material or evidence of a potential release is encountered, the MEDEP should be contacted immediately. For petroleum related contaminants, soil may then be evaluated using a PID and bag headspace testing or an oleophilic dye shake test. Field screening results should be interpreted using guidelines presented in the MEDEPs *Compendium of Field Testing of Soil Samples for Gasoline and Fuel Oil*, dated, October 25, 2012. These guidelines include action levels for both screening techniques, presented below.

PID Guidelines

SOP No.TS004
Date: October 15, 2012
Revision: 2.1

Table 1: Approved PID Field Cleanup and Notification Guidelines

Cleanup Scenario	Soil size [grams]	Ion	Thermo	Passport	Foxboro	MiniRAE	Photon
Leaching to GW/ Notification	200	80	60	60	50	40	40
Resident/ Park User	20	700	275	500	250	350	300
Outdoor Commercial Worker/ Excavation-Construction Worker	5	1200	500	850	375	1500	400

Note: No adjustment is made for set points; the response factor should be 1.0 for all instruments.

Instrument Descriptions

Ion: Ion Science PhoCheck Series
Thermo: Thermo Environmental OVM 580 Series
Passport: MSA Passport PID II OVM
Foxboro PID: Foxboro TVA-1000 PID mode
MiniRAE: RAE Systems MiniRAE 2000 and MiniRAE 3000
Photon: MSA Photon Gas Detector

Oleophilic Dye Test Guidelines

Results are reported as saturated, positive, slightly positive and undetected as described below:

- Saturated when obvious red (or blue) dye is observed in the soil matrix, or in/on the water (may stain the side of the jar);
- Positive when only the EPS bead is dyed dark pink/ red or blue and there is no coloration in the soil or water;
- Slightly Positive when only the EPS bead is dyed light pink or blue and there is no coloration in the soil or water; or
- Undetected when there is no coloration in the soil or water and the EPS bead remains white.

Results are interpreted as described below:

- Undetected result indicates no cleanup is required unless laboratory results indicate an exceedance of a leaching to groundwater exposure criteria.
- Positive/ Slightly Positive result indicates cleanup is needed for leaching to groundwater, excavations less than 200 cubic yards, and resident/park user scenarios.
- Saturated results indicate cleanup is needed for leaching to groundwater, resident/park user and outdoor commercial/ excavation-construction worker scenarios.

If soil is not impacted with CoPC then it may be reused on-Site. If it is determined to be impacted with CoPC, it may remain on-Site, but should be buried at least 2 feet below the ground surface or capped under asphalt pavement or an appropriate and approved by MEDEP cap. If the soil is deemed saturated with CoPC or poses a significant threat to human health or the environment, and it cannot be mitigated through capping, then it should be immediately addressed using other remedial alternatives. One potential alternative is to properly characterize and dispose of the impacted soil off-Site at a licensed disposal facility.

If proposed Site activities are anticipated to result in **the removal, disposal, or off-site relocation of any Site soils**, additional assessment or characterization should be conducted as appropriate, regardless of observed soil conditions or field screening results. Characterization and sampling parameters may vary depending on the proposed and or final destination of the excavated material.

Licensed Disposal Facility – **This is the preferred destination for any soil leaving the Site**. Prior to transporting material off site for disposal, the owner, Site Representative, or an assigned contractor should contact licensed disposal facilities regarding acceptance criteria and any associated waste characterization sampling. Disposal rates and acceptance criteria are likely to vary.

Samples will be analyzed for the appropriate CoPC identified according to MEDEP guidelines and or the requirements of the licensed disposal facility.

The owner and or Site Representative will obtain analytical results from the laboratory in both electronic and hard-copy formats. Laboratory analytical data will undergo a quality assurance/quality control review at the time of receipt. Hard copies of the analytical data should be maintained in the owner or Site Representative's project files.

3.6 Soil Handling and Disposal

Contaminated soil that is required to be transported off the Site to an approved licensed disposal facility based on the additional characterization, will be handled in accordance with the protocols described below.

- The owner, Site Representative, and or designated personnel must be on the Site during all stockpiling, loading, and hauling operations.
- Erosion and sediment control will be performed in accordance with best management practices.
- Dust control measures will be performed as appropriate.
- Contaminated soil that cannot be immediately transported off the Site will be stockpiled on impermeable plastic sheeting (a minimum of 6-mil thick) with a berm around the perimeter of the stockpile. The plastic sheeting and berm prevent the runoff of contaminated stockpiled soil to surrounding areas. The berm may be constructed with hay bales or other equivalent methods approved by owner and or Site Representative. If the soil is not placed on an impermeable layer, the bottom plastic sheeting will be lapped over the berm materials, and the soil stockpile within the berm will also be covered with plastic sheeting to prevent erosion or leaching of contaminants from the soil stockpile impacting the underlying soil. The upper plastic sheeting covering the soil stockpile will be secured using sand bags or an equivalent to prevent the stockpiled soil from being exposed to precipitation and wind.
- For both on- and off-Site soil transportation activities, the contractor will exercise care during loading of contaminated soil into trucks to minimize spillage of the soil onto the ground surface.
- Contaminated soil loaded into trucks and transported off the Site will be covered if weather conditions (e.g., dry, warm, or windy conditions) could cause soil to blow out during transport to the disposal facility.
- Trucks leaving the Site will be free of loose soil on the exterior of the trucks and may require covers.
- Trucks will not be allowed to leave the Site if liquids are draining from the load. The contractor will use care not to track soil onto city roads and must routinely wash down the trucks to prevent soil from being tracked onto the roads.
- Transport tracking tickets will be required, which document the haul to the approved disposal facility for each truck leaving the Site.

3.7 Groundwater Extraction

If groundwater is proposed for extraction, the groundwater should be analyzed for contaminants of concern and compared with any and all criteria established for the intended use. These may include, but not be limited to, drinking water standards (maximum exposure guidelines), Residential RAGs, and or discharge parameters during proposed dewatering for foundation(s). If characterization indicates CoPC are present, the owner or Site Representative following consultation with MEDEP may be able to infiltrate the water back into the Site with or without treatment, with proper approval from the owner/developer and MEDEP, or containerize the water in temporary tanks for off-Site disposal to a licensed facility.

3.8 Capping Options

The owner or Site Representative will discuss soil capping options with MEDEP prior to the on-Site disposal of any impacted soil. Any impacted soils remaining in-situ at the site must be properly covered by at least 2 feet of clean fill material and/or a MEDEP approved soil cover system (e.g., concrete/asphalt/paver hardscape system and/or landscaped softscape systems, etc.). The basic option, as discussed earlier in this EMMP, is to bury CoPC impacted soil at a minimum of two-feet below grade and cover it with clean fill. The owner or Site Representative also has the option, pending consultation with and approval from MEDEP, to install 12 inches of clean material on top of the CoPC impacted soil. The 12-inches of material typically consists of 4 to 8 inches of compacted clean fill below 4 inches of loam or topsoil. A marker layer such as a plastic snow fence is typically installed on top of the impacted soil layer. Another option is to install the marker layer on top of the impacted soil and construct 4 inches of fill with a 2 to 4-inch layer of pavement or concrete on top of the fill. The last option is to place a building foundation, asphalt parking lot, or other MEDEP approved hardscape cover system on top of the impacted material. MEDEP VRAP also requires that a sub-slab vapor mitigation system be installed under any new buildings constructed at the Subject Property. Annual inspections of all caps would be required and any corrections or repairs to the cap would be required upon discovery.

4.0 DOCUMENTATION REQUIREMENTS

This section describes the requirements for documentation of infrastructure improvements on the Subject Property that may encounter known and or potentially contaminated soil and groundwater. These documentation requirements include providing notifications to MEDEP prior to commencing infrastructure improvements, documenting construction activities, health and safety planning, and preparing a post-construction summary report. Capping or other restrictions on the property shall have a Declaration of Environmental Covenants drafted, approved, and registered with the deed for perpetuity.

4.1 Notification to the Maine Department of Environmental Protection

The owner and or Site Representative will provide written notification to MEDEP of infrastructure improvements and or redevelopment that require soil disturbances (see contact data below). The notifications will include a general description of the proposed activities and how material will be managed. This EMMP is intended to address specific environmental conditions at the Site and assumes all soil disturbance activities are being conducted according to good commercial and customary practices in conformance with relevant state and federal regulations. **If at any point contractors or on-site personnel encounter evidence of a release or have concerns regarding potential hazards to human health or the environment**, they may contact MEDEP at;

Mr. Ted Wolfertz
Division of Remediation and Waste Management
Maine Department of Environmental Protection
State House Station 17
Augusta, Maine 04333-017
207-629-8130 email: ted.wolfertz@maine.gov

4.2 Health & Safety

A Health and Safety Plan will be prepared for all infrastructure improvement projects or soil disturbance activities on the Site that may encounter known and/or potentially contaminated soil and groundwater.

4.3 Contractor Reporting Procedures

The contractor performing infrastructure improvements/redevelopment may prepare detailed records of soil excavation, stockpiling, re-use, or disposal. This should include the origin, destination, and volume of soil that is loaded and hauled to an approved off-Site disposal or treatment facility, and or re-used as fill on the Site. Soil excavation, handling, and disposal activities should be documented in the daily field reports. Depending on project scope, the daily field reports and results of soil sampling and analysis may be summarized in a final report prepared by the contractor and submitted by the owner and or Site Representative to MEDEP.

4.4 Field Documentation

All work covered under the EMMP may be documented, including daily and/or weekly field reports and a final summary report that documents and summarizes all field activities, on-site and off-site soil/groundwater management, and includes disposal documentation, as applicable. Field notes should be as descriptive and inclusive as possible, allowing independent parties to reconstruct the sampling activities from the recorded information. At a minimum, field documentation should include the date, location of the work, weather conditions, sample collection data, field equipment used, and any activities performed in a manner other than specified in the EMMP. In addition, other forms completed or used (e.g., Chain of Custody form, maps) should be referred to and included. Field personnel should sign the reports and these should be kept on file by the owner and or Site Representative.

4.5 Summary Reporting

Upon completion of future infrastructure improvement activities on the Site, a Summary Report may be prepared and submitted to MEDEP. This report is strongly suggested, but is not mandatory. A Summary Report would present the results of the activities completed at the Site, including the following:

- Summary of infrastructure improvement/redevelopment activities completed at the Site;
- Preparation of plan map and summary tables for confirmation sampling, as necessary; and
- Conclusions regarding the final construction or redevelopment activities.

4.6 EMMP Updates

The EMMP must be updated at the conclusion of each redevelopment project to reflect “as-built” information related to identification of any new contamination and/or the installation of any cover systems. The updated EMMP will be submitted to the MEDEP for review and approval.

5.0 ANTICIPATED QUESTIONS

The following are examples of anticipated questions and answers and are provided as guidance to the grounds and maintenance staff and other potential users of the Subject Property.

Why are there restrictions on soil disturbance?

Historical operations at the Subject Property included the use and or storage and release of many CoPC. Previous assessment activities confirmed the presence of CoPC in soil and groundwater; however no compound exceeded a corresponding Construction/Commercial Worker RAG. It remains possible that future soil disturbance activities encounter contaminants at concentrations that pose a risk to human health or the environment. The intent is also to limit potential exposure, including the possibility that potentially impacted material is moved off-site, where it may pose a greater risk to sensitive receptors including unsuspecting individuals.

Future land use or redevelopment will most likely be limited to commercial use based on current zoning. Owners and or Site Representatives at the Subject Property should consult MEDEP or a Qualified Environmental Professional prior to advancing any reuse for residential purposes, schools, childcare facilities, or long-term health care facilities, or other uses that include sensitive populations.

Why is there a restriction on groundwater extraction?
Groundwater at the Subject Property has the potential to contain CoPC and as a result, the extraction of groundwater is not advised without additional analytical testing.

Will all subcontractors need to comply with this EMMP?
Yes, contractors that will be disturbing the surface, subsurface, or conducting significant or pertinent building modifications should be made aware of the potential environmental hazards at the Subject Property as well as the limitation and or concerns on transporting soil off-site. It is the current property owner's responsibility to make contractors aware of this EMMP.

What does this mean for future development?
Any future development should involve consultation with a Qualified Environmental Professional and or MEDEP. Based on current available data, the majority of the on-Site soils do not pose a significant risk to inhabitants of the property or individuals participating in construction and or excavation activities at the Subject Property. However, the potential for encountering unknown or unquantified contaminants remains elevated at the Subject Property. The Subject Property should not be used for residential purposes, schools, childcare facilities, or long-term health care facilities without further consideration and or assessment activates.

If I have any questions, who do I call?

1. Thomas Kittredge, City of Belfast Economic Development Director (207) 338-3370 Ext 116, or
2. Ted Wolfertz, Maine Department of Environmental Protection (207-629-8130), or
3. Rich Campbell, Campbell Environmental Group, (207-253-1990).

FIGURE 1
Topographic Locus Map
Belfast Fire Station
273 Main Street, Belfast, Maine